

# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

JUNE 1945

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# COMMERCIAL CAR JOURNAL

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# INTERNATIONAL Trucks



# WASHINGTON RUNAROUND

**More Speculation on ODT Demobilization . . . Jan. 1 or Apr. 1 Likely Wash-up Dates . . . Last Half Truck Program 285,205 . . . Production Rate Approaches Annual Prewar Sales . . . Frequency Order an Issue . . . Component Output Amazes . . . More Tires . . . Statistics, etc.**

## ODT Demobilization

Last month this department speculated on demobilization plans of ODT's Highway Transport Department. On the basis of further inquiry into the subject we can indulge in a little more speculation. And it's nothing more than speculation because not for another 30 days will ODT itself know how it will demobilize. Shortly after V-E Day section heads were asked to submit recommendations for the demobilization of their sections. The recommendations were to be in by May 31. After that would come study of the suggestions, discussion of debatable points, and then the drawing up of a coordinated plan.

## Sections Make Suggestions

The task given the section heads was, admittedly, not an easy one. They have no control over basic factors such as material availability, motor truck and parts production, all of which depend upon the extent of military cutbacks. And the Army seems to be playing the game ultra-safe, at least at this stage of the redeployment to the Pacific. Consequently the section heads must do a little speculating themselves. Some find this easier to do than others. So personal views will differ and these will have to be reconciled in staff discussions.

## Jan. 1 or Apr. 1 Wash-up

Until definite plans are formulated, this department will stand on the speculation indulged in last month. This goes even for the winding up of truck rationing by Jan. 1. However, within the ODT Allocation Section can be found those who think that truck rationing will continue throughout the first quarter of 1946. At any rate, this difference of opinion provides what may be considered a minimum—Jan. 1—and maximum—April 1—period during which ODT may be expected to totally demobilize its Highway Transport Department.

## More Trucks & Trailers

Since last month's speculation, several developments served to support the views expressed. First was a WPB decision adding 188,700 trucks to the truck program for the last half of this year. ODT hopes to have all these additional trucks allocated for civilian use. Added to the 96,505 trucks previously scheduled to be made during the second half of 1945, this would make a total of 285,205 trucks. At the same time 6696 trailers were added to the last-half trailer program to make the total for the year 26,000. This was the amount requested by ODT originally. Materials for trailers will enjoy a AA-1 priority. Materials for



by **GEORGE T. HOOK**

the additional trucks will have a AA-2 priority, as compared with the AA-1 for the original 1945 truck program. But the AA-2 still keeps all truck production ahead of passenger cars, refrigerators, washers, alarm clocks, stoves and the like in the rush for materials.

## Cause for Optimism

The additional program of 188,700 trucks includes 85,000 light, 95,000 medium, 5000 light-heavy, 3000 heavy-heavy and 700 off-highway. The Army, it is understood, did not make an issue of the WPB authorizations. It simply advanced the opinion that the program could not possibly be realized because it exceeded the Army cutbacks "in sight." Optimists prefer to think that what cutbacks the Army has "in sight" now are but a slice of the cutbacks that will be "in sight" within the next 90 days. There is a presumption that the Army is not cutting back drastically now in order to build up supplies in the Pacific while the shift of materials from Europe is being made, and to avoid a sudden high degree of unemployment. The belief is that the cutbacks will come in spurts to make more gradual reconversion to civilian production.

## Army Cutback 75,000 Units

There has been no official announcement of Army truck cutbacks. But this department has it from a usually reliable source that since

(TURN TO NEXT PAGE, PLEASE)



## WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 35)

V-E Day the Army has cut back 42,000 light trucks (jeeps), 25,000 light-heavy and 8000 heavy-heavy trucks. However, the light-heavy and heavy-heavy manufacturing facilities, it is said, are being grabbed for parts. The latter, if true, can only be a temporary measure. Anyhow, the cutback of 75,000 units represents little better than a 10 per cent cutback of the Army's 1945 truck program. Compare this with the 40 per cent and 50 per cent automotive cutback predicted back in the false-alarm reconversion period preceding the Battle of the Bulge and you'll have the reason why the optimists feel as they do.

### Parts Restrictions Off

Another development was a revision of the replacement parts order L-158 removing all restrictions on production and distribution. Parts for trucks of 1½-ton capacity and up will continue to have a AA-1 priority for procurement of materials. Parts for light trucks and passenger cars will have a AA-2X priority. On top of this the WPB authorized passenger car manufacturers to build 200,000 cars this year if they can get the materials.

### Trucks Enjoy Priority

Since trucks, in what remains of the original 1945 truck program enjoy a AA-1 priority, and trucks in the additional program have a AA-2 priority, trucks as a whole have precedence over all passenger car manufacture. What is more, members of the Truck Manufacturers Industry Advisory Committee have indicated to the WPB that the truck industry can meet the demands of the additional 1945 program. They

are, therefore, lined up in the ranks of the optimists.

### Output Nears Normal Sales

Now, assuming that the original and additional civilian truck programs, totaling 285,205 units, are realized in the second half, this will mean an annual production rate of roughly 570,000 units. Bearing in mind that all these are destined for civilian users we have only to compare this figure with prewar new truck sales to determine the extent to which "normal" conditions are being approached. It so happens that the peak new truck sales year was 1941 when civilians purchased 640,697 units. Therefore, it becomes the task of the ODT Allocation Section to justify a continuation of rationing.

### Allocation Section Analysis

In fairness to the Allocation Section it must be said that it is not bureaucratically minded. The thinking there, so far as this reporter can detect, is not along the lines of perpetuating rationing and the jobs that go with it. The prevailing attitude is that truck rationing should not be continued any longer than is absolutely necessary, and certainly no longer than ODT is able to handle the job with no increase in personnel. The present ODT rationing setup is not geared to handle more than an annual production rate of 200,000 trucks. The setup, of course, could be changed and, without any increase in personnel, could be made to handle more trucks. The writer is familiar with one such plan but is not in position to reveal it. However, even this plan does not contemplate continuance of rationing once truck production reaches a rate of between 300,000 and 400,000 trucks. Looking at the situation conservatively, the Allocation Section thinks this rate will be reached during the first quarter of 1946. Looking at the picture a little less conservatively, this department—supported by the views of truck manufacturers—thinks this rate will be reached and exceeded during the last half of this year and, consequently, should spell the end of truck rationing by Jan. 1.

### Rationing Last Activity

There is every indication that

truck rationing will be the last activity washed out by the ODT Highway Transport Department. Next to last will very likely be the maintenance specialists. And by that time the district offices should be operating with skeleton staffs.

### Frequency Order an Issue

Aware of the fact that conservation orders will be washed out, only one group of carriers appears to be exerting any pressure for the retention of one order. The order in question is that having to do with frequency of deliveries. The private carriers affected are by no means unanimous in favor of its retention. The chances are that an appeal to ODT will not get very far. It is common knowledge that the order is widely ignored. It has not been enforced and there is no disposition to start rigid enforcement at this time. The large operators who have lived up to the order are fearful that if it is revoked they will be under pressure from organized labor to return to prewar operating conditions.

### Budget Cut Over 50%

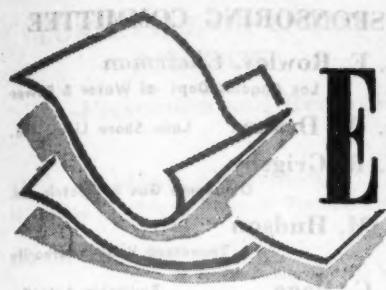
The ODT Highway Transport Department's budget for the fiscal year beginning July 1 will be less than 50 per cent of what it was at the beginning of the current fiscal year. The entire ODT budget for the 1944-45 fiscal year was roughly \$15,000,000, of which 80 per cent or \$12,000,000 went to Highway Transport. The next fiscal budget calls for \$7,700,000, of which roughly 75 per cent or \$5,675,000 will go to Highway Transport.

### Component Output Amazes

The ODT Maintenance Section's rehabilitation program was a huge success during 1944, according to figures just compiled. The rehabilitation program, in case you have forgotten, had as its aim the production of component units to help operators maintain their vehicles more efficiently. In 1944 the production of bare engines in this program reached the astounding total of 250,000, whereas the program called for 169,000. Production of rear axles was 7000 units, or 98 per cent of the program. The output of transmissions was 18,000, or about 59

(TURN TO PAGE 240, PLEASE)

# EDITORIAL



## Trucks Are Here to Stay

OUR Government must plan for the future. . . . In planning for that future, we must recognize that every part of the transportation business is here to stay. We must recognize that the full use of our resources will require a transportation industry even larger than we now have. We must recognize that we need every part of this industry. . . . Railroads and trucks are here to stay. Both should strive to advance their mutual interests, and neither should attempt to obtain an advantage by trying to ruin the other.

I want you to know that responsible people in the Government have in mind your right to full protection after the war.—*From an address before the American Trucking Associations, St. Louis, Oct. 20, 1942.*

## "Integration" Means Monopoly

THE reason that I differ with the proposed "integration" of transportation systems is that I believe that that proposal is fundamentally based upon the concept that a permanent level or pattern of transportation has been achieved and it is now simply a question of organizing its structure and distributing its fruits.

To me the proposal implies the adoption of the cartel theory which in essence expounds the view that those who, at one time, either themselves, or more often their predecessors, made signal contribution to the advancement of civilization are, by reason of that fact, entitled to an existence in perpetuity at the expense of society in general without making any further contributions.

This proposition I hold to be fundamentally unsound and unattainable no matter how desirable it might appear to be.—*From an address before the Traffic Club of Baltimore, Md., Feb. 1, 1944.*

*This month this department is devoted to statements bearing on transportation matters excerpted from addresses made by Harry S. Truman, then United States Senator from Missouri, and now President of the United States of America*



Harry S. Truman addressing the American Trucking Associations in Chicago

## More Transportation Needed?

I THINK there is a very serious question as to whether or not such limits [on the granting of franchises] have not already become too rigid and whether we do not need more transportation enterprises, rather than less. Congress has delegated a very sweeping power to the Interstate Commerce Commission without a detailed definition of standards. I simply suggest that possibly the I.C.C. may have gone farther than necessary in discouraging the entry of new blood into the body of our transportation system.

I can say, however, that we must not permit anyone to get the idea that a franchise is simply an annuity donated by the public, permitting a life of ease and indolence regardless of the service rendered the public.

A certificate of convenience and necessity is rather a privilege to perform a public service for gain—a two-way proposition. When the de-

sire to serve the public ceases—the privilege of receiving the reward should likewise cease.—*From an address before the Traffic Club of Baltimore, Md., Feb. 1, 1944.*

## Joint Service & Through Rates

THERE remain great fields for improving our transportation service, notwithstanding the high level of achievement we have already gained. Great improvements can be made in the methods of transshipment between railroads, trucks, barges and ships through standardized and unit packaging, the use of mechanical materials-handling equipment, \* \* \* through demountable and transferable truck bodies and improved ferrying devices and many other ingenious time-saving and cost-reducing methods and devices.

Other great improvements can be made in modernizing, standardizing and reducing the cost of transportation equipment which will likewise be reflected in an improved and cheaper shipping service.

In the financial and operating field, the establishment of joint service and through rates can produce a combined service which will permit each field of transport to perform, in concert with others, the unique type of service in which it excels.—*From an address before the Traffic Club of Reading, Pa., March 2, 1944.*

## What Ails the Railroads

THE railroad ills are the result of a combination of circumstances. Their financing has been used as a means of making great fortunes, greater, to the detriment of the roads and the public. \* \* \*

There are great railroad systems in this country now being operated by lawyers and engineers and accountants who could not sell gold. (TURN TO PAGE 100, PLEASE)

## A REPORT FOR THE BUSY FLEET OPERATOR

The causes, prevention and removal of engine deposits have been the subject of research for many years. In the past, a number of articles on these subjects have appeared in COMMERCIAL CAR JOURNAL—whenever the experiences and findings of fleet mechanics and automotive engineers were of interest and value to fleet operators.

In this issue, COMMERCIAL CAR JOURNAL presents the latest available data on these problems. The findings are those of experts, identified in the next two columns. In a foreword to its published findings, the investigators say:

"This committee report will attempt to state, as briefly as possible, recommendations regarding engine deposit problems. These problems will be considered from the viewpoint of the average fleet operator. Many SAE papers, and other literature, are available for those who are especially interested in particular phases of the subject. This committee report only endeavors to give brief, practical answers to the fleet operator too busy to concern himself with research into the subject."

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# ENGINE DEPOSITS: Prevention

**Heavy-duty oils of proper quality will help control certain engine deposits but not substitute for preventive maintenance; caution urged in changeover and in drainage periods**

**H**EAVY-DUTY oils (oils with oxidation inhibitors and detergency dispersive additives) have followed the development of high output engines in general and diesel engines in particular. Many fleet operators know that, while such oils have from the start commanded a higher price, in their early forms they were not always better lubricants. Some such early oils had detergency additives which stimulated oxidation and corrosion. As a result, while these oils sometimes solved difficult lubricating problems in other engines where no difficult problem existed, they sometimes gave poorer rather than better results.

In recent years much has been learned through field use of these oils, especially under war conditions. We can

now definitely recommend that the fleet operator with high output engines or with varied equipment use heavy-duty oils. Quality oils of this type will help greatly in controlling high and intermediate temperature deposits in the engine and in preventing bearing corrosion. These troubles are the types that are most likely to bother bus operators and freight haulers. Such oils will not remove sludge due to cold operation in winter

(a type of trouble most likely to be troublesome in door-to-door delivery work) but will help clean up such sludge when warmer summer temperatures arrive and, by keeping the engine clean in the summer, will minimize the effect of cold sludge deposits when winter comes.

Heavy-duty oils will help solve engine lubrication problems for the fleet operator but are not remedies for badly worn engines, inefficient crankcase ventilation or operation at unreasonably low engine temperatures.

It is of interest to report that, whereas gasoline, gear steels, and many other wartime materials which we use, are below peace-time standards, present heavy-duty lubricating oils are improved over peace-time standards.

A word of caution should be given in connection with a change-over from regular to heavy-duty oils. The cleansing action of the heavy-duty oils may loosen existing engine deposits and possibly result in clogged oil screens or lines. Therefore, the use of such oils should be started in clean engines or oil drainage periods should be short for several drains to give a chance to clean up the engines. Advice of the oil supplier can be followed.

\* EDITOR'S NOTE — This is a special SAE Committee Report. Copies are available in pamphlet form at Society of Automotive Engineers, 29 W. 39th St., New York City, as follows: 1 to 10 copies, \$1 each, post-free, 75% discount to SAE Members. Lots of 11 to 100 copies, 20 cents each; lots of 101 to 1000 copies, 15 cents each; 1000 copies, \$100; 5,000 copies, \$250; 10,000 copies, \$350; 25,000 copies, \$750. F.O.B. New York, no discounts.

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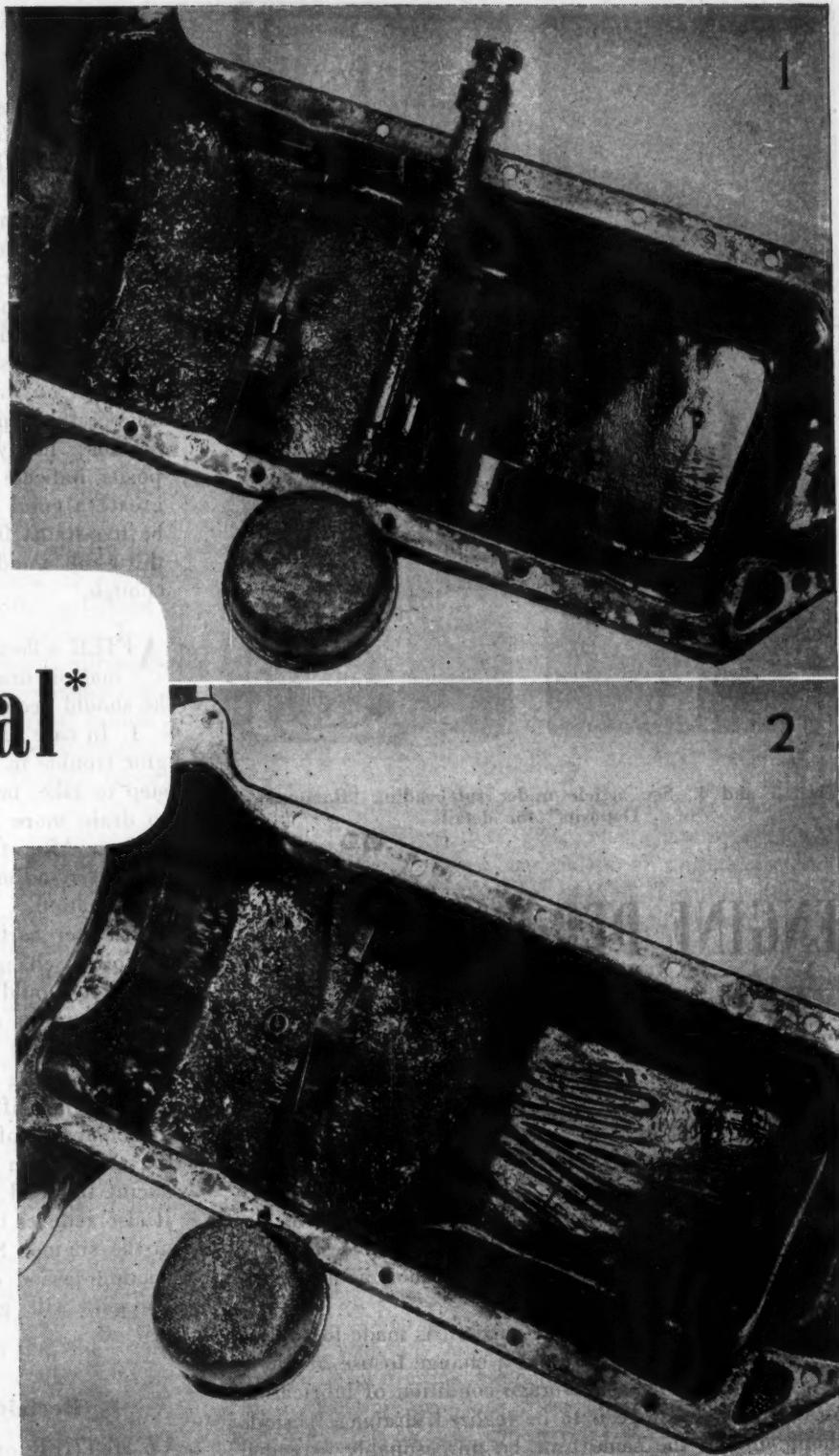
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# and Removal\*

Mention has been made above to quality heavy-duty oils. It is difficult for a fleet operator to judge quality of such oils except through extended field tests. However, the fleet operator can protect himself in buying heavy-duty oils by making such purchases from reliable suppliers and requiring from such suppliers assurance that the oils offered meet the qualifications of "U. S. Army Specification 2-104B." If desired, the date of the Ordnance Department approval under this specification can be requested.

Tests of oils to meet the above Army specification are according to procedures developed by the Coordinating Lubricants Research Committee of the Coordinating Research Council. These procedures include engine tests to determine the effect of the oil on ring sticking, wear, and accumulation of deposits; the break-in characteristics and ability of the oil to carry load without scratching; the stability of the oil and tendency to corrode copper-lead bearings; the oxidation characteristics, detergency, and certain other characteristics including compatibility of additives. This last will be of interest to operators who may be faced with the need of using different oils at different locations with the possibility of individual trucks getting oils at those different locations. The other tests are of even



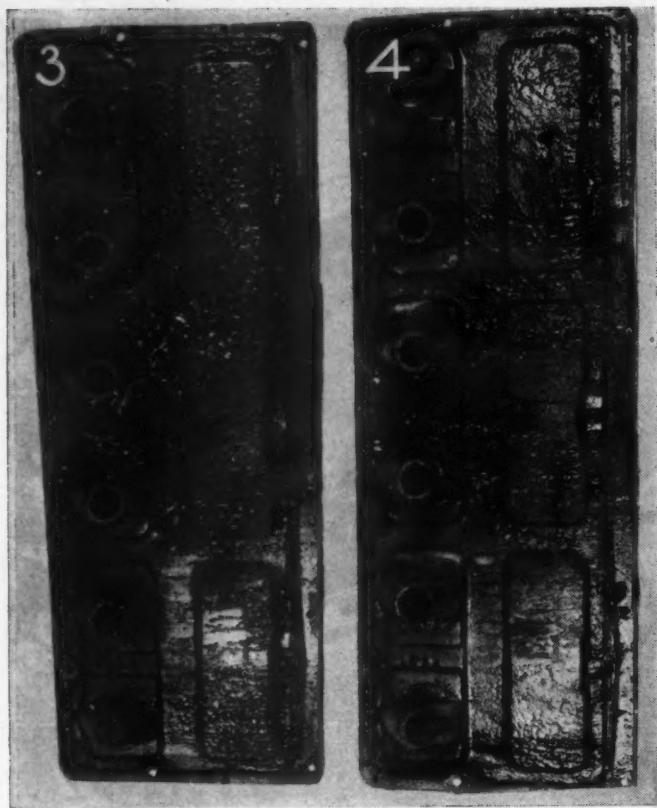
Figs. 1 and 2. See article under sub-heading "Removal of Deposits" for details

greater importance, and all may be accepted as satisfactory tests for oils for fleet use.

### When Oil Should Be Drained

MENTION has been made of need for draining more frequently when changing over dirty engines to heavy-duty oils. This brings up the much discussed

(TURN TO NEXT PAGE, PLEASE)



Figs. 3 and 4. See article under sub-heading "Removal of Deposits" for details

## ENGINE DEPOSITS: Prevention and Removal

(Continued from Page 39)

question of when should oils be changed under ordinary conditions. Fleet operators will recognize that this depends upon the quality of engine maintenance, quality of oil, type of service, and whether or not oil filters are used.

Usually, a change to heavy-duty oil is made to correct some lubrication difficulty and a change to use of filters is made to improve the average condition of lubrication oil. If this advantage is to be realized, drainage periods should not at the same time be unreasonably extended or operators will be in the position of trying to "eat their cake and have it also."

The consideration of oil-change period in an engine deposit discussion is important, since the biggest share of the deposits is the result of oil decomposition. However, the transition of the oil from its original state to that at which it begins to lay down deposits is not a single step but, rather, a long and involved chain of events; and if the oil is removed from the engine before this final state is reached, the deposits will not have occurred.

Oil drainage periods in most fleets vary between 1000 miles and 6000 miles. The higher figure is safe where

maintenance is good, oil is of high quality, filters are used, and sustained operations are the rule. The lower figure should be used when engine wear is high, when there is some question of adequate lubrication, or in cases of intermittent or door-to-door operation. A general average for small or scattered fleets is 2000 miles between oil drains.

In determining oil drainage periods in individual fleets, the condition of the filter cartridge, while not infallible, may serve as a guide. For instance, a rusty color (if no water leaks are present) could indicate low temperature operation and the need for short drainage periods; heavy cartridges completely filled with deposits indicate that the period between drains is too great (a good average to strive for is for cartridges to be five-sixths full at drainage periods); cartridges one-third full could indicate the oil is not being used long enough.

After a fleet operator has determined the proper normal oil drainage period there are three more items he should keep in mind:

1. In case of any engine deposit trouble, or other engine trouble in which the oil is suspected, an immediate step to take, until the trouble is definitely analyzed, is to drain more frequently during the period of investigation. After the trouble is "licked" the drain period can be re-adjusted in light of experience during the investigation.

2. Filter cartridges should always be changed when the oil is changed. Even if the cartridge is relatively clean, it should not be left in when the oil is changed as the deposits already in the filter will help deteriorate or contaminate the new oil.

3. "Draining hot" should be practiced. This means *hot* and not fifteen to thirty minutes after the engine has come out of service. This does a great deal toward the elimination of crank pan deposits and toward reducing the load on the oil cleaning system of the engine. It also reduces to a minimum the amount of old oil left in the engine. Such old oil has passed through the induction period of deterioration and, if not thoroughly drained, will greatly accelerate deterioration of the new oil.

### Reclaiming Drained Crankcase Oil

Whether or not to reclaim has been a much debated question for years. Many fleet operators who reclaimed drained crankcase oil have had the experience that, whenever there was engine trouble, the garage foremen would say, "It's that reclaimed oil." Such operators have usually found on running down the trouble that reclaimed oil was not to blame. Experience with reclaimed oil was satisfactory in many cases.

However, the situation has changed in recent years in the following respects:

1. Reclaiming is practiced to reduce lubricating costs. This saving at best is small compared with costs of engine parts and maintenance labor. These latter are so critical at present that the best possible lubrication is

justified rather than any practice that is at all doubtful.

2. A large percentage of heavy-duty engines have copperlead bearings. Oil reclaimed by the usual reclaiming equipment available to the fleet operator has been found harmful to copper-lead bearings in a number of cases.

3. The additives in heavy-duty oils are usually consumed in service or removed in reclaiming. Restoring these additives by operators after reclaiming is not usually practical.

In general, it can be said that reclaiming crankcase oil at present is not satisfactory (if the oil is to be used in high-output engines) unless the oil is re-refined not only in name but also in actuality—and that this re-refining is not practical for the average operator.

For those more interested in this question, it will be well to read the paper in the S.A.E. Journal of April, 1943, on Re-Refining of Aircraft-Engine Oils by Gilbert K. Brower, Materials Engineer, American Airlines, Inc. That paper reviews experiences with seven different methods of reclaiming oil. While the requirements for aircraft-engine oil are higher than for some road vehicle service, the conclusion reached as to the requirements of an oil reclaiming system are common to both types of engines.

### Removal of Deposits

ENGINE deposits can be completely removed only by an engine teardown and complete overhaul. If a quality heavy-duty oil is used, there should be no need for removing engine deposits between normal engine overhaul periods in most types of fleet operation—the exception being engines operated at low engine temperatures. If, due to type of oil used in operating conditions, crankcase deposits accumulate to the extent that they may interfere with the operation of the engine, the time-tried method of removing those deposits has been to drop the oil pan, remove the valve cover plate, and manually clean the exposed parts.

This method requires considerable labor. Any method of removing these deposits which is less time-consuming and less expensive is very attractive. As a result, there are many solvents offered with the claim that they will remove engine deposits if (1) added to engine oil, or (2) used in place of the engine oil for a certain period of operation, or (3) flushed through the engine lubricating system in a prescribed routine. With the increase of crankcase deposits in automobiles due to wartime driving restrictions, there has been greatly added interest in these solvents in the past two years. Typical claims are that such materials keep piston rings free, dissolve sludge deposits in rings and ring grooves; and remove varnish or lacquer deposits from piston surfaces.

THIS committee has had access to the results of many tests made with such solvents. In these tests, solvents were used as directed; but oil pans or other parts were removed before the test and after so photographs could be made to record changes in deposits. Figs. 1 and 2 show before and after views of a Ford V-8 oil pan and

oil screen made in a test of a widely known solvent. Figs. 3 and 4 show before and after views of a Chevrolet valve side plate from a test of another well known solvent. In both cases, there is very little change in the nature or the volume of the engine deposits. In these, and the other tests referred to, the amount of deposits removed was such a small percentage of the deposits present that it seems apparent that benefits are minor or short-lived. In addition, use of such solvents involves some risks in that (1) those deposits which are loosened may contain grit which is then circulated through the lubricating system to bearings and cylinder walls and (2) enough deposits may be loosened to enable completely clogging the already partially clogged oil pump screen.

While it is understood that certain solvents which are now in the development stage show more promise, the present opinion of this committee is that the time-tried method of dropping the oil pan is the best and, generally, the only practical way of removing crankcase deposits.

### Summary

IN THIS discussion, it may appear that much is claimed for heavy-duty oils. This committee recognizes that they are not panaceas for all engine ills and that they are an adjunct to and not a substitute for preventive maintenance. They represent, for instance, no substitute for good engine condition. A worn engine is a dirty one as is indicated by Ralph Teetor's oft-repeated statement "Show me an engine with high oil consumption and I will show you a dirty one." The detergent oils do not have unlimited dispersive powers—after a certain amount of suspendable material has reached the crankcase, the detergent is exhausted and can no longer hold additional material. It must be recognized that there is a limit to such qualities.

Since there is a limit to these qualities, it is evident that the ability of the oil to prevent engine deposits will also depend upon the regularity of oil changing and on the volume of the crankcase oil. In connection with this last point, experience has proved that the best performance with any oil in a heavy-duty engine is found with the largest crankcase capacity. In some cases, difficult lubrication problems have been solved by simply increasing the oil pan capacity. The committee wishes to call attention to this point because some fleet operators have made a practice of purposely reducing crankcase capacities by remarking dip sticks. This is usually a false economy, as the volume of oil saved on oil changes represents a small value compared with the possible benefits of having the correct amount of oil in the crankcase.

It must be recognized also that the control of engine deposits is coupled with some other factors (a most important one is adequate crankcase ventilation) which cannot adequately be discussed in this report. However, it is the committee's belief that the measures proposed in this report represent answers to the major engine deposit problems of the average fleet operator.

# Dynamometer Checks

**OPERATING INSTRUCTIONS**

1 HEAD UNIT ON MACHINE. 2 THROW ROLLER LOCKS DOWN AND TURN WHEELS SLOWLY TO CENTER UNIT ON ROLLER.  
3 SET EXHAUST ANALYZER ACCORDING TO INSTRUCTIONS BEFORE CONNECTING. 4 TURN ON WATER SUPPLY VALVE OF MACHINE.  
5 INSERT WATER COOLER HOSE IN RADIATOR THEN START COOLER. 6 PLACE MAGNETIC THERMOSTAT ON CYLINDER HEAD AWAY FROM EXHAUST PORT.

**TEST OPERATE all TESTS IN HIGHEST GEAR**

FULL LOAD-RUN UNIT WIDE OPEN THROTTLE 40 MPH. RECORD READING IN "BEFORE SERVICE" COLUMN. BRING UNIT DOWN TO 20 MPH. AND RECORD. Now RECORD the "BEFORE SERVICE" CRUISING TEST. CRUISING LOAD-RUN UNIT 40 MPH. with 20 H.P. LOAD. Record Readings. RELEASE THROTTLE and BRING DOWN TO 20 MPH. DO NOT CHANGE LOAD on the DYNAMOMETER. IT SHOULD READ ABOUT 4 or 5 H.P. RECORD READINGS.

**ADJUSTMENTS**

TO TEST TIMING OPERATE UNIT AT 25 MPH. WIDE OPEN THROTTLE, SET DISTRIBUTOR WHILE RUNNING to give MAXIMUM HORSE-POWER.....

CARBURETOR FOR MAXIMUM HORSE-POWER and ECONOMY. Readings SHOULD BE Within the FOLLOWING LIMITS

FULL LOAD at 40 M.P.H. .... 12.5-13.5 FULL LOAD at 20 M.P.H. .... 12.0-13.0  
CRUISING at 40 M.P.H. .... 14.0-15.0 CRUISING at 20 M.P.H. .... 13.5-14.8

*..Do not Blow Breath in Analyzer..*



## TROUBLE CAUGHT BEFORE IT HAPPENS

"Except in automotive laboratories, there are very few chassis dynamometers used for engine trouble shooting. This fleet has one and this is how it is used to catch trouble before it happens:

"... Trouble usually is indicated by a drop in horsepower. The dials indicated a drop of slightly more than 10 per cent. This is not alarming, as a rule... But this unit would not tune up..."

"According to our system, there was nothing left to do but tear the engine down and look at it. We finally found the skirt had broken off one piston and a valve had a microscopic crack. This engine would have failed on the road..."

How's that for preventive maintenance? Perhaps this story contains just the information that you have been looking for.

Fig. 1. Operating instructions for using the chassis dynamometer, with proper steps for adjustment, are placed on a large wallboard. Thus, all trucks get identical testing



Roy C. Patton

WE'VE changed our maintenance schedules from a mileage basis to a time basis and have started keeping accumulative records of the ratio of gasoline consumption to horsepower.

Each unit in our fleet of 66 tractors, 57 pickups and 11 service cars is scheduled to be tested on a chassis dynamometer every two weeks.

Checks are made against the best record made and small variations lower give us our first indication of the need of valves, rings, or complete engine overhaul.

Each unit is also brought into the shop after every trip where it is given a visual check for such things as excessive tire wear, sheared spring center bolts, loose wheels and clutch adjustment. Electrical system is also checked at this time. Next the unit is greased thoroughly. The safety equipment and tire pressures are checked and the unit is ready for the road. At this time, if it is due

# Help Drop Road Calls 50%

**Driver complaints also cut in half as trucks get periodic instrument checks and chassis dynamometer tests that simulate actual road and load conditions**



Fig. 2. A careful check-up is made and all data recorded on special forms for each engine. Load controlled by push-button. Tester applies load and watches results on dial

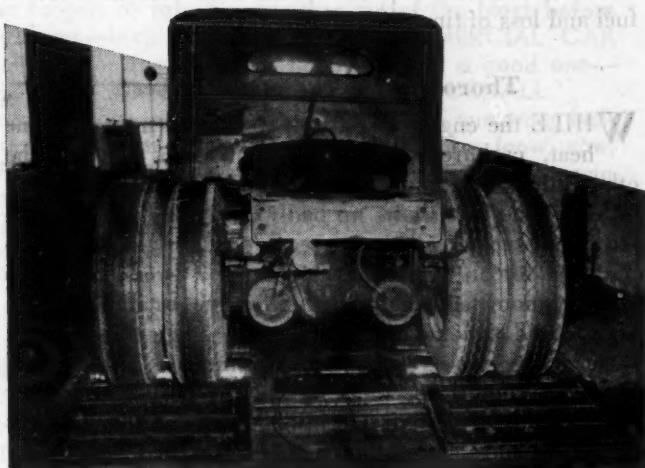


Fig. 3. Load is applied to the truck's or tractor's rear wheels by the dynamometer's hydraulically controlled rollers. Wobbly wheels or prop shafts and worn bearings are easily detected

to take a chassis dynamometer test, test and checking is done simultaneously.

Since there are comparatively few chassis dynamometers in use outside of laboratories, I will explain that this system provides testing of a vehicle under actual driving conditions.

The unit is operated in gear on the testing stand, and various loads are applied to measure the tractive effort at the rear wheels. Instruments give the relation of gasoline consumption to horsepower. Load is applied to the rear wheels through rollers under the wheels that are held back by water, as shown in Fig. 3. By pressing buttons, load can be varied to simulate road conditions. The operator watches and records results that show up on the instruments as shown in Fig. 2. A record of the performance is kept on a special card. A reproduction of one of these cards, with actual test data, can be seen in Fig. 4.

by ROY C. PATTON

Maintenance Superintendent, Miller Motor Express, Charlotte, N. C.

Engines are tested for full load at 40 and 25 m.p.h., and with cruising load at 40 and 20 m.p.h. The readings of performance showing carburetor and horsepower are kept for permanent record at these speeds.

When testing with load and without load, a dangerous rise in heat indicates need of correction. It may be a slipping clutch, a plugged radiator or timing, spark advance. Whatever it is, the man at the test stand must make the necessary corrections before he can proceed with the test.

## Impending Road Failures Caught

HOW it is possible to be forewarned of impending road failure usually is indicated by a drop in horsepower, such as we had on a unit just a few days ago. The dials indicated a drop of slightly more than 10 per cent in

(TURN TO NEXT PAGE, PLEASE)

# Dynamometer Checks Help Drop Road Calls 50%

(Continued from Page 43)

horsepower. This is not alarming, as a rule, because many times a slight adjustment in timing will give a gain of from 4 to 6 hp., and carburetor jet correction will add another four or five.

But this unit would not tune up. No amount of adjustment and checking would push the engine up to its previous performance as indicated on the record card.

According to our system, there was nothing left to do but to tear the engine down and look at it. We finally found the skirt had broken off one piston and a valve had a microscopic crack. This engine would have failed on the road at least by the second trip, if not on the next one out—but the next trip out would have cost us more in fuel and loss of time than it should.

## Thorough Checks at Each Test

WHILE the engine is on test, we check timing, engine heat, carburetor, valves, compression and all the other things that make an engine perform properly.

An engine that shows up badly could easily remain on the dynamometer all day or early tests might send it to the shop for an overhaul. After this it would return to the dynamometer, where it would either establish a new high record or come up to its previous highest record.

Since the chassis dynamometer simulates actual road and load conditions, we are able to check for wobbly rear wheels, driveshaft vibration, brake adjustment, acceleration and deceleration.

## Complaints Requested

DRIVERS are instructed to fill out complaint sheets after every trip. These complaints are incorporated into the repair order shown in Fig. 5. If these are of a minor nature, and can wait until the regular inspection

Fig. 4, below. A performance record of each tractor is kept on 5 x 8-in. cards. Tester's goal is to match engine's best record

Fig. 5, right. This is essentially a work order, 8 x 11-in., which sends a tractor to chassis dynamometer for bi-monthly checks

JANUARY - JULY												FEBRUARY - AUG.												MARCH - SEPT.												APRIL - OCTOBER												MAY - NOVEMBER												JUNE - DECEMBER												NO. MONTHS INACTIVE
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# HEARD / by the GREASEMAN

Whenever there is a real tough mechanical problem in the garage someone is sure to get a laugh by repeating the famous suggestion of the night dispatcher when they couldn't raise the dollies on a 30-ft. trailer on a bitter cold night. And it was a hot load that had to roll. "Why not cut them off with the blow torch" was his innocent suggestion, getting mixed up with the welding outfit.

\* \* \*

"Dusty" is a good driver but an expert at disappearing about the time the dispatcher needs a man for a city pick-up. His favorite hangout is the garage. One day the garage foreman finally said, "Dusty, can't they find anything for you to do around the terminal?" "Hell," came back "Dusty," "they can't even find me."

\* \* \*



The night yardbird had strict instructions to scrape off the word EXPLOSIVES stencilled all around the trailer, left there from a previous trip. Otherwise it could not get through the Holland Tunnel. So he got a putty knife and a high ladder and went to work. It was slow work. He got down, poured out a little container of anti-freeze and tried it with the alcohol. It was still tough going. Again he got down. This time he got

When sober Sam's witty retort to the driver's wisecrack sets the boys in stitches—tell it to COMMERCIAL CAR JOURNAL. When the new helper forgets to take his wrenches out of the block before replacing the head—keep cool, tell it to COMMERCIAL CAR JOURNAL. And when the parts salesman tells you a good one—boy, oh, boy, TELL IT TO COMMERCIAL CAR JOURNAL!

This is your good gag department. Send in those humorous incidents, witticisms (keep 'em clean, boys), or good jokes (now, now, don't dust off the old joke books—we have them, too) that occur daily in the shop. All acceptable items will be paid for at regular publication rates. Address your humor to Editor, COMMERCIAL CAR JOURNAL, Philadelphia 39, Pa.

the little can of red paint, used to make red light bulbs out of clear ones, got up on the ladder and painted a big red NO before each word EXPLOSIVE, and away rolled the load to New York.

\* \* \*

*The Boss has a job he always gives to fellows who have too many hangovers. Taking the rust scale off brake shoes by tapping them with a ball pean hammer. It goes through you like a riveting hammer.*

\* \* \*

Garage men crave beauty. Every garage is full of beautiful girl calendars. So we all enjoyed it when the buxom Rosie from the office came



in monthly to collect for the Flower Fund. But one genius refused to pay on a monthly basis. So now the sweetly scented Rosie bust-les through

every payday. We all like it. Rosie does too.

\* \* \*

Driver Bowmaker has a good old Anglo-Saxon name and still writes like one. Here's his last repair sheet: "No power cluck macke a noise when you start out hood need to be fext transmission veberate all the time carier barings is bad."



\* \* \*

And this one goes poetic. "Take a peep at points. Give front end a glance, it got the roamers. Headlights good for looking in ditches and peeping in windows. Tractor shakes all over. Take out chains before I sell them."

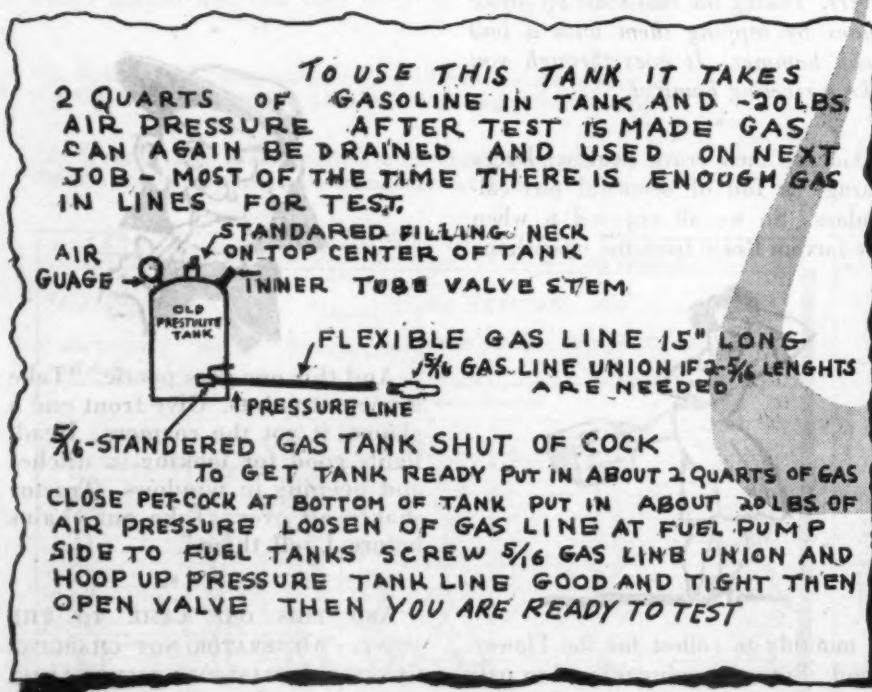
\* \* \*

AND THIS ONE CAME TO THE POINT. "GENERATOR NOT CHARGING. CHECK FOR MANIFOLD GASKET LEAK. STINKS."

(TURN TO PAGE 126, PLEASE)

# SHOP & SALVAGE HINTS

Commercial Car Journal will pay \$5 for acceptable shop hints and \$5 for parts salvage tips. A snapshot or a rough drawing with a simple explanation is all that is needed. CCJ will polish them for publication. Send one in today! Illustrated below is a typical contribution—just a rough sketch and a brief statement of the problem and its solution. See how it looks in Fig. 1. This brought Erwin Nagel \$5. There are other \$5 bills waiting for your contribution. Don't underestimate your ideas. Let the editor judge.



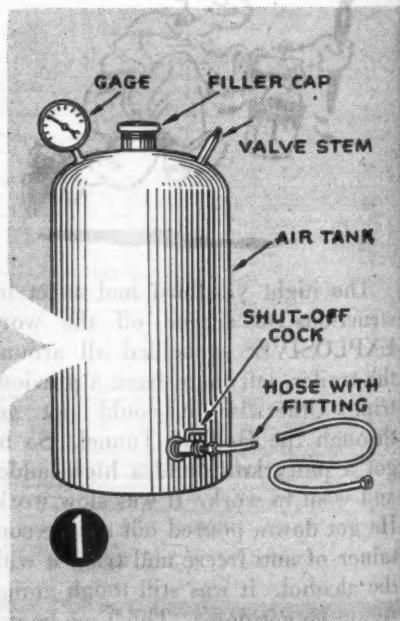
**1. Fuel Line Tester**  
by Erwin W. Nagel  
International Harvester Co.  
Allentown, Pa.

The last few years we have had some serious fuel line trouble. Trucks would be completely gone over in the shops only to stop on the road somewhere later with no gasoline at the carburetor. We found that many of these troubles were due to the gas lines opening up at the seams from vibration and heat. But the leak would not show up in the shop.

To enable mechanics to check gasoline lines under pressure in the shops, I made a test tank. For the tank itself I used an old Prestolite tank, but if they are not available, any heavy tank will do. I drilled and tapped the top opening to fit an innertube valve stem. Opposite this in the top I drilled a 5/16-in. hole and placed an air gage in it.

In the center of the tank I used a regular filler neck and regulation gas tank cap as shown in the diagram. A 5/16-in. gas line fitting was then placed in the lower side of the tank and a flexible line with Universal fittings used for necessary connections.

To get tank ready, put in about 2 qt. of gas, close pet-cock at bottom of tank, put in about 20 lb. of air pressure. Loosen gas line at fuel pump side to fuel tanks and screw 5/16-in. gas line union to the line. Hook up pressure tank good and tight and then open the valve at the pressure tank. Now you are ready to test.



## 2. Removable Gasket Guides

by Roy Conrath  
Conrath's Auto Repair Shop,  
Indiana, Pa.

I find this method very handy in making oil pan and other gaskets stay put. It is especially helpful in installing V-8 oil pans which are so hard to get on and where it means so much if it does move.

Cut the threaded end off four or six bolts of the size used on the pan. Point the rough end of this stud for easy starting into the holes in the block. Now screw the studs into the block by hand at points where the gasket is most likely to move. Press the gasket over the studs and into position. After several of the regular cap screws have been tightened down, these studs can be removed and kept for the next job.

This works equally well when putting engine heads on where cap screws are used instead of studs.

## 3. Gas Tank Cleaning

by Lloyd G. Taylor  
Pa. Power and Light Co., Allentown, Pa.

I recently removed a tractor gasoline tank which had collected a heavy scale of rust and corrosion. Cleaning it was going to be a problem, and a new tank was out of the question.

I conceived an idea that solved the problem. Probably others can make use of it. I soldered a nut on each end of the tank in the exact center. Then I put the tank between the lathe centers and soldered a lip at the chuck end of the tank to take the

place of a lathe dog. After the tank was mounted on the lathe, I put several handfuls of nuts into it. (Ed. note: small pieces of leather straps mixed with such metal would be good too.)

Then I started the lathe at a very slow speed and let it turn for approximately  $\frac{1}{2}$  hour. After removing the tank I washed it thoroughly with gasoline and blew it out with air. Needless to say the job was well done.

## 4. Brake Repair

by Frank E. Seftcheck  
Swift & Co., Brooklyn, N. Y.

When adjusting rear wheel brakes on the 1841 Chevrolet truck, the mechanic may find that he is unable to get an adjustment because of the worn brake adjusting pinion. The tips on this pinion become short and fail to make proper contact with the cylinder assembly cover.

Replacing the rear brake flange

plate is a big job. We use the following method in making a permanent repair. We use a small welding tip and weld a bead of metal on each tip of the adjusting pinion as shown in the illustration.

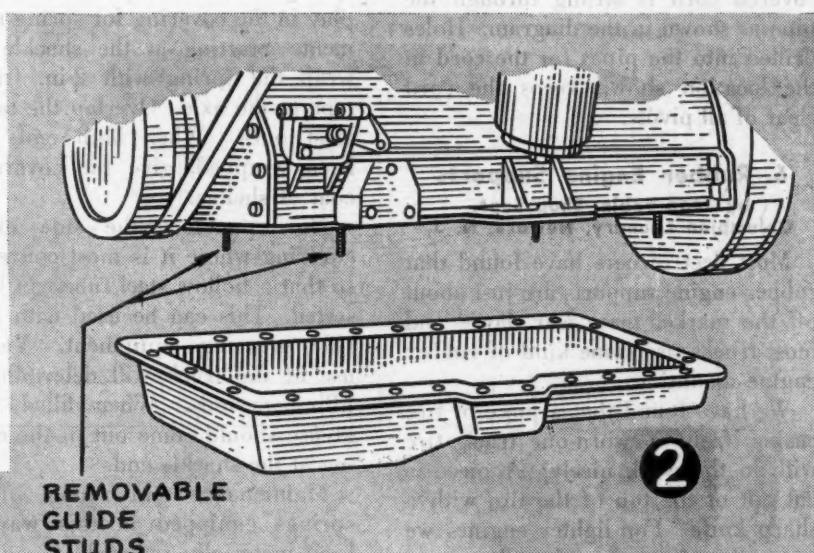
## 5. Improved Trouble Lamp

by Howard B. Dillman  
Fairfield Lumber Co., Fairfield, Conn.

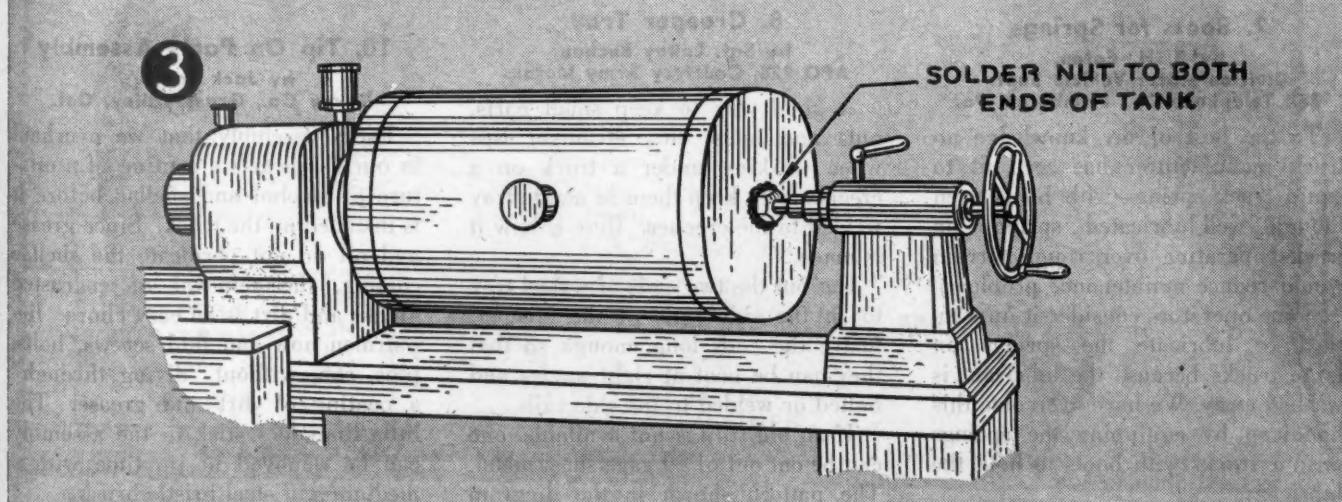
Here is a simple and rugged trouble lamp we have found to be very handy in the shop. It can be adjusted to any angle and gives a better light in many cases than the trouble lamp. It can be made easily and from salvaged parts.

The parts required are a flywheel, two pieces of pipe, an old fog lamp, wire and two bolts. One end of a  $\frac{3}{4}$ -in. pipe is welded to the flywheel for the base. The other end of the pipe is slotted to a depth of 2 in. and a  $\frac{3}{8}$ -in. hole is drilled perpendicular

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SOLDER NUT TO BOTH  
ENDS OF TANK



# SHOP IT & SALVAGE HINTS

(Continued from Page 47)

to the slot. This pipe should be about 48 in. long. One end of a 24-in. pipe is then flattened to fit into this slot. The other end of this piece is slotted to accommodate the lamp bracket. This bracket is made from a piece of stock  $\frac{3}{4} \times \frac{1}{4} \times 3$  in., bent at right angles so that the fog lamp can be mounted to it. The rubber covered cord is strung through the pipe as shown in the diagram. Holes drilled into the pipes for the cord in the location shown keeps the cord clear of all pivots.

## 6. Rubber Engine Supports

by Jean Babin, Shop Supt.  
Columbian Laundry, Newark, N. J.

Most fleet owners have found that rubber engine supports are just about off the market these war days—and most trucks use some kind of rubber engine mounting.

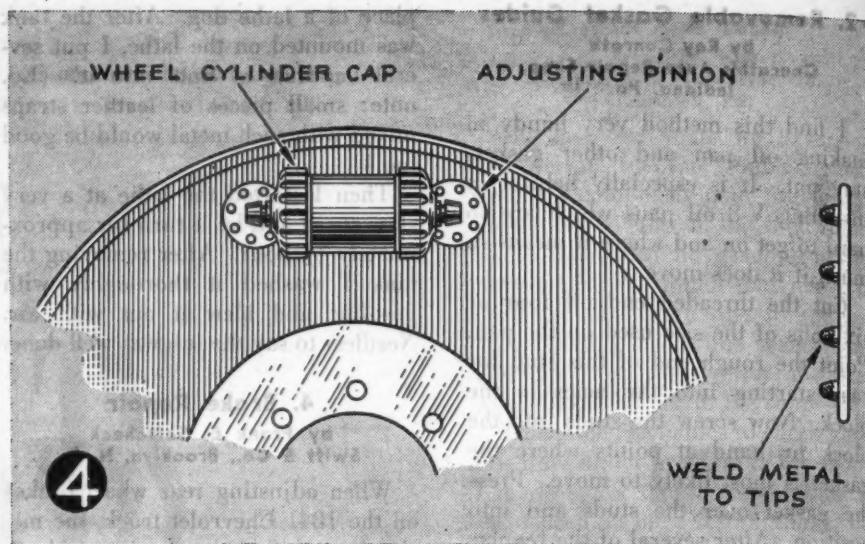
We have found that a piece of tire casing from a worn-out truck tire will do the work nicely. A piece is cut out of the top of the tire with a sharp knife. For lighter engines we use a piece from the sidewalls.

## 7. Boots for Springs

by B. H. Eaton,  
Division Motor Vehicle Supt.  
Bell Telephone Co., Pittsburgh, Pa.

To the best of my knowledge no truck manufacturer has seen fit to equip truck springs with boots even though well-lubricated springs on trucks operating over rough terrain would reduce maintenance problems.

Some operators consider it impractical to lubricate the springs on large trucks because the lubricant is washed away. We have overcome this handicap by equipping the springs on our trucks with boots to hold the lubricant.



One way of making these covers is as follows: Place a steel wire of  $\frac{1}{8}$ -in. diameter on the top leaf of the spring. This is to provide sufficient play in the covering for spring movement. Starting at the shackle end, wrap the spring with 2-in. friction tape to the axle. Overlap the tape at least once. When both ends have been wrapped, give the covering a coat of shellac.

Now puncture the side of the covering where it is most convenient so that a hollow steel tube can be inserted. This can be used with available greasing equipment. Varying use of the truck will determine the filling periods. When filled, fresh grease should come out of the covering at the shackle end.

Maintenance and repair of our springs equipped in this way has been materially reduced.

## 8. Creeper Tray

by Sgt. LeRoy Buchan  
APO 928, Courtesy Army Motors

A good way to keep small parts, nuts and bolts, etc., at finger tips when working under a truck on a creeper is to keep them in a side tray welded to the creeper. Here is how it is made.

Cut out the two ends of a steel tray to fit the side rails of the creeper. Leave the ends long enough so that they can be bent at right angles and bolted or welded to the side rails.

If an old tray is not available, one can be cut out of 10 gage sheet metal. The pattern shown in the diagram

will vary with the size and shape of the creeper rail. The general principle can be followed.

## 9. Lockwasher Tool

by Pfc. Everett D. Troop  
Hq. & Hq. Det., Fort Lawton,  
Courtesy Army Motors

It is sometimes hard to remove lockwashers when servicing wheel bearings. No tool in the average kit is well adapted to prying them out. Here is a tool that can be made easily and simply for this type of work.

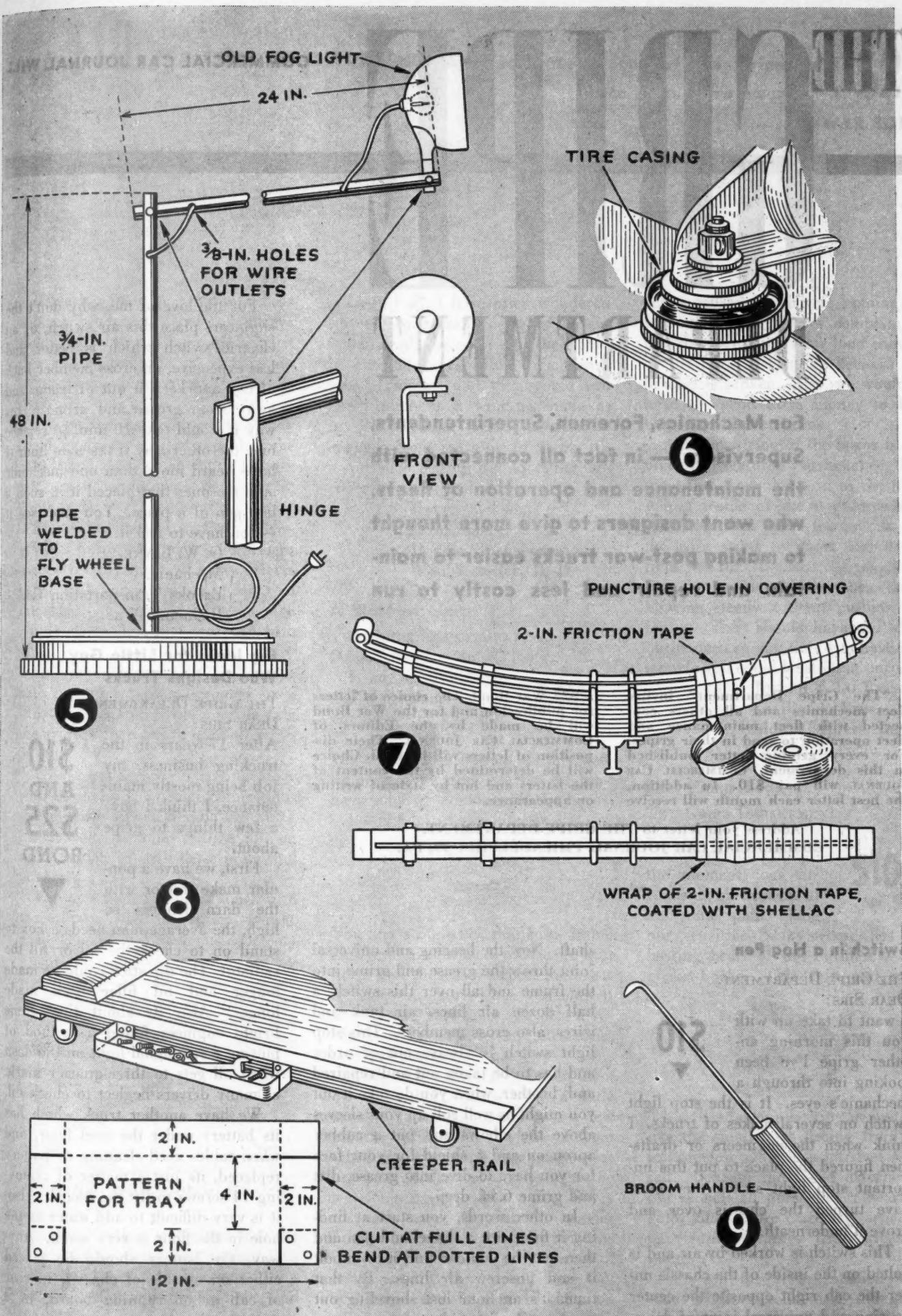
A piece of welding rod 10 in. long is flattened at one end and bent at right angles as shown in the diagram. This hook should be hardened and left not more than  $\frac{1}{8}$  in. wide. The handle can be made from a piece of broom stick or similar wooden stock.

A simple tool like this will save a lot of time and patience when tearing down wheels and assemblies.

## 10. Tip On Parts Assembly

by Jack Bronte  
Covey Co., Grass Valley, Cal.

Every assembly that we overhaul in our shops gets a coating of a mixture of alcohol and shellac before it is installed on the truck. Since grease and oil do not permeate the shellac coating, the removal of encrusted grease and dirt is an easy chore. Repairmen now can find screws, bolts, pins, etc., without "diving through" a coating of dirt and grease. The little that does stick to the assembly can be removed in jig time with a medium stiff steel bristle brush.



# THE GRIPE DEPARTMENT

COMMERCIAL CAR JOURNAL WILL

**For Mechanics, Foremen, Superintendents, Supervisors — in fact all connected with the maintenance and operation of fleets, who want designers to give more thought to making post-war trucks easier to maintain and repair and less costly to run**

"The Gripe Department" invites fleet mechanics and all others connected with fleet maintenance and fleet operation to send in their gripes. For every griping letter published in this department, COMMERCIAL CAR JOURNAL will pay \$10. In addition, the best letter each month will receive

a \$25 War Bond. The choice of letters for publication and for the War Bond will be made by the Editors of COMMERCIAL CAR JOURNAL. Their disposition of letters will be final. Choice will be determined by the content of the letters and not by style of writing or appearance.

Address your letter to THE GRIPE DEPARTMENT, COMMERCIAL CAR JOURNAL, PHILADELPHIA 39, PA.

## Switch in a Hog Pen

THE GRIPE DEPARTMENT,  
DEAR SIRS:

I want to take up with you this morning another gripe I've been looking into through a mechanic's eyes. It is the stop light switch on several makes of trucks. I think when the engineers or draftsmen figured the place to put this important stop light switch they must have turned the chassis over and drove it underneath.

This switch is worked by air and is bolted on the inside of the chassis under the cab right opposite the center bearing and universal joint of drive-

\$10

shaft. Now the bearing and universal joint throw the grease and grime into the frame and all over this switch, a half dozen air lines, air tank and wires, also cross members. This stop light switch is always out of order and has to be taken out and repaired and, brother, when you do take it out you might as well roll up your sleeves above the elbows and put a rubber apron on and a shield for your face for you have to dive into grease, dirt and grime 6 in. deep.

In other words, you start at finding it first with a shovel and pan and then may be you can find it to unbolt it and unscrew air lines. By that time, it's an hour lost shoveling out grease and grime.

For the love of me, why don't the engineers place this air switch, or an electric switch which is better and less expensive, on cross member back of cab and keep it out of frame and away from grease and grime. This way it would take 10 min. to replace one, the other way it takes an hour. I have heard more than one mechanic cuss the ones that placed it in such a hog pen of a place. You can't see it — you have to feel it.

G. W. LAYNE,  
Mechanic,  
Brooks Transportation Co.,  
Richmond, Va.

## Big Ideas for Little Guy Who Designs Trucks

THE GRIPE DEPARTMENT,  
DEAR SIRS:

After 17 years in the trucking business, my job being mostly maintenance, I think I have a few things to gripe about.

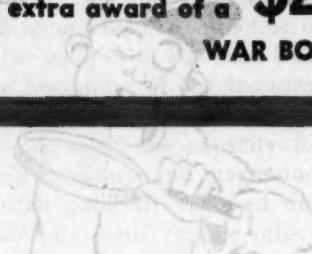
\$10  
AND  
\$25  
BOND

First, we have a popular make tractor with the darn fenders so high, the average man needs a box to stand on to check the oil or fill the radiator. The dip stick could be made longer and oil filler neck made longer. Also its about time some bright engineer found a method of putting a red signal light on the dash when oil gets to three-quarter mark, as many drivers neglect to check oil.

We have another truck which has its battery under the steel floor, and when cables need cleaning or battery replaced, its just a matter of removing 14 screws to lift the board. Also, it is very difficult to add water as the hole in the floor is very small. Any way, the battery should be placed either on outside of chassis, in rear of cab or on running board, in a metal box.

PAY **\$10**

FOR EVERY GRIPE PUBLISHED AND each month one of the Grips will receive an extra award of a **\$25 WAR BOND**



Replacing fuses on some models is another headache. There is always plenty of room on the dash so that they can be removed in jig time instead of squirming around under the dash.

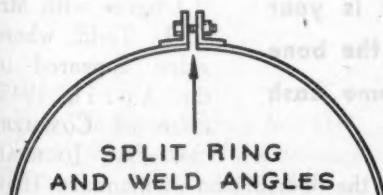
I hope the day comes when they use flat radiator grilles instead of the ones that bulge out so far it takes a 4-ft. crank handle when necessary to crank truck.

Side ventilators to cool off a driver's feet in hot weather would also be a good improvement, as many drivers suffer with sore dogs on account of the heat. I remember years ago nearly all trucks came equipped with same.

On some latest model trucks, the cabs must have been designed by a little guy, because when entering cab, the average man has to duck to get in or out.

I have yet to see an engine made with the holes for heater connections drilled and tapped ready for quick installation, as it is quite a job on some models to drill these holes and tap same.

We have had trouble at times with the middle ring on spoke wheels, coming loose and have cussed plenty when trying to lock same, so am enclosing rough sketch of ring with two small angles welded on with holes drilled and screw bolt to hold same secure. Sometimes we have spent



considerable time to try and lock the rings, but by using this method it is just a matter of a few seconds to slip the ring on and screw up tight, and there is no danger of it coming loose.

Last of all, I have often wondered why someone hasn't designed an automatic radiator cover, one that could be controlled according to temperature of motor, and that would roll down same as a window shade as in cold weather when temperature changes from morning to night. It's a nuisance getting out to either uncover or cover radiator.

HAYDN A. DODD,  
Maintenance,  
Dodd's Transportation,  
West Warwick, R. I.

#### A Blast at Horns

THE GRIPE DEPARTMENT,  
DEAR SIRS:

I am a dispatcher and a mechanic in my company for the last 23 years. I do not know why it is but up to this date we never got a truck yet that we don't have a lot of trouble with the horns.

**\$10**



You buy a big truck that costs \$5000 and find it equipped with a 10-cent horn, and then they expect motorists to hear your horn when you blow it and start to pass them. I call it a 10-cent horn because, by my estimation, that's all the value it has.

And, furthermore, they fasten them on these big trucks with a little bracket. After the truck gets a few months old they break right off from vibration. Why don't they put heavier brackets on them at the factories, so we don't have to lose a few hours on each truck to make a heavier bracket? And the time really amounts up when you have 30 or 40 pieces of equipment. If they would have bigger horns and heavier brackets on them, we would save a lot of head-

aches caused by drivers coming in from trips and always complaining that the horn don't blow loud enough or the horn is hanging because the bracket is broken. Also, we wouldn't have to spend extra money to buy bigger and better horns.

And the wiring of the horns is another bad feature. For instance, they put wires from the horn to the horn button inside of the steering wheel. After the truck gets a few months old the wire starts to short and every time you turn the steering wheel the fuse burns out or the horn keeps blowing steady without pushing the button. They should have the wires in the open so any time you have any trouble you could locate it at once.

JOSEPH J. LO BIONDO,  
Lo Biondo Bros.  
Motor Express, Inc.,  
Bridgeton, N. J.

#### Fuel Pump Bugs

THE GRIPE DEPARTMENT,  
DEAR SIRS:

Our specific gripe of the moment bugs the roadside air because of an acute pain along our sensitive flanks where lies the beating heart of the business — our pocket-books. This thin and worn

**\$10**



device has taken a beating in spots — like the small boys fleeing from the watermelon patch in a burst of rock-salt. Beneath the faded exterior of our emaciated purse lies a heart of gold, and we are extremely sensitive to visiting termites with larcenous intent.

We are far from satisfied with today's commercial car, though a (TURN TO PAGE 106, PLEASE)



# SERVICE MANUAL GRIPES

What do you think of the Service Instruction Manuals, and bulletins that are issued by automotive manufacturers? What's wrong with them? What changes would you like to see made in postwar service manuals? Would you like to see service instructions put out in an entirely new form?

New postwar vehicles, parts, accessories and equipment will require new service instructions. Now is the time for mechanics and shop foremen to tell factory service men how those instructions should be prepared for maximum usefulness.

## \$10 FOR A LETTER — MAYBE A \$25 WAR BOND, TOO

Here's your chance to take a hand in guiding factory men to do the right thing by you. For every letter published on this subject Commercial Car Journal will pay \$10.

In addition, the best letter each month will receive a \$25 War Bond. The choice of letters for publication and for the War Bond will be made by The Editors. Choice will be determined by the content of the letters and not by style of writing or appearance.

Address your letter to THE GRIPE DEPARTMENT, Commercial Car Journal, Philadelphia 39, Pa.

### Willing to Pay for Suggested Improvements

THE GRIPE DEPARTMENT,  
DEAR SIRS:

While I am now working for a manufacturer, I was for several years manager of a Ford dealership where we serviced many different makes of cars.

I would like to submit the following suggestions on service manuals and bulletins.

1. Some manuals are too brief and some are too technical. A happy medium would be a book written in simple terms and form, avoiding technical names and phrases. This book should contain sufficient information to enable the ordinary mechanic to perform adjustments and repairs on units and assemblies with which he may not be familiar.

2. Some manuals are too wordy, thus confusing the average fellow. Instead of describing operation procedures they should be listed step by step.

3. Units or assemblies that are peculiar to the vehicle or are a radical

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departure from standard should be covered in detail with sufficient illustrations to give the average mechanic a working knowledge of the unit or assembly.

4. Manufacturers usually know of short cuts for certain operations, and these should be passed on.

5. Many times a mechanic will spoil or botch a job because he is not informed of the delicacy of certain operations. Books should include cautions on all delicate or involved operations.

6. Some books are still stingy with illustrations. While I do not believe in illustrations for everything, I do believe that exploded views of assemblies are a great help to the mechanic.

7. I have many times observed fel-

lows thumb through an index two or three times to find a listing. I believe a certain amount of cross indexing would save a lot of time as well as wear and tear on the book. For example, there is usually more than one

kind of a pump on a vehicle. Shall we list "Fuel Pump" under fuel or pump, or both? The same applies to many and more complicated examples than this.

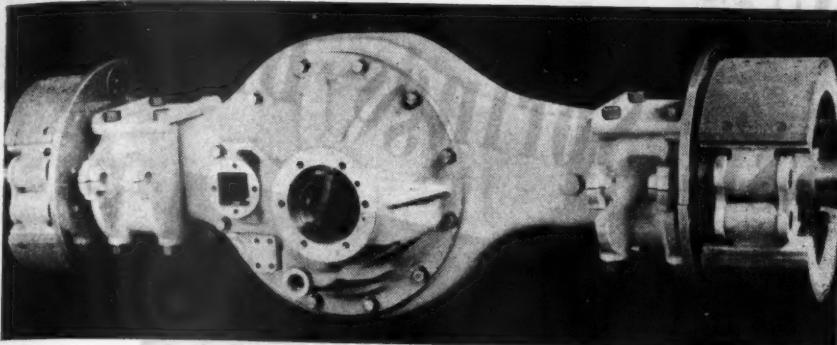
I agree with Mr. C. L. Todd, whose gripe appeared in the April, 1945, issue of COMMERCIAL CAR JOURNAL

on the distribution of manuals. They should be made available to all fleet maintenance men, who are in need of them, at a nominal cost.

HARRY O. OSBORNE,  
Indianapolis, Ind.

(TURN TO PAGE 102, PLEASE)

# EYEING the FUTURE



Despite the heavy appearance of this rear axle housing and brake assembly, it weighs 696 lb. less than its iron and steel counterpart. It is made of aluminum.

## Light on Lightweight Metals for Postwar Trucks

Although parts will need to be "beefed up" and weatherability is in question, aluminum and magnesium should net g.v.w. savings

by JOSEPH GESCHELIN

Commercial Car Journal. Detroit Technical Editor

**I**N HIS "Thought Starter No. 116" "Buck" Weaver of GM Customer Research quoted the following from an anonymous source: "Most anyone will admit that he couldn't conduct a symphony, perform an appendectomy, or even run an automobile factory, but rarely do we find a man who doesn't think he can sing

tenor or handle a big government job." We believe that is equally true of the arm chair strategist—whether it be on military affairs or the design of motor vehicles.

Consider the prospects for the light metals—aluminum and magnesium. Arm chair strategists have been shouting for several years about the

use of these materials in motor vehicles of all kinds. Some have had the naive notion that a wave of a wand would cast out the familiar materials upon which the structure of automotive equipment has been built since the beginning of the industry. Others had the idea that because the war had increased the capacity for producing aluminum and magnesium manyfold, it naturally followed that these materials would replace others.

**A**LL OF this has been confusing. The fact of the matter is that the light metals have an increasingly important place in all equipment that rolls or flies. Why? Not because of abundance or super-abundance but for reasons of economy.

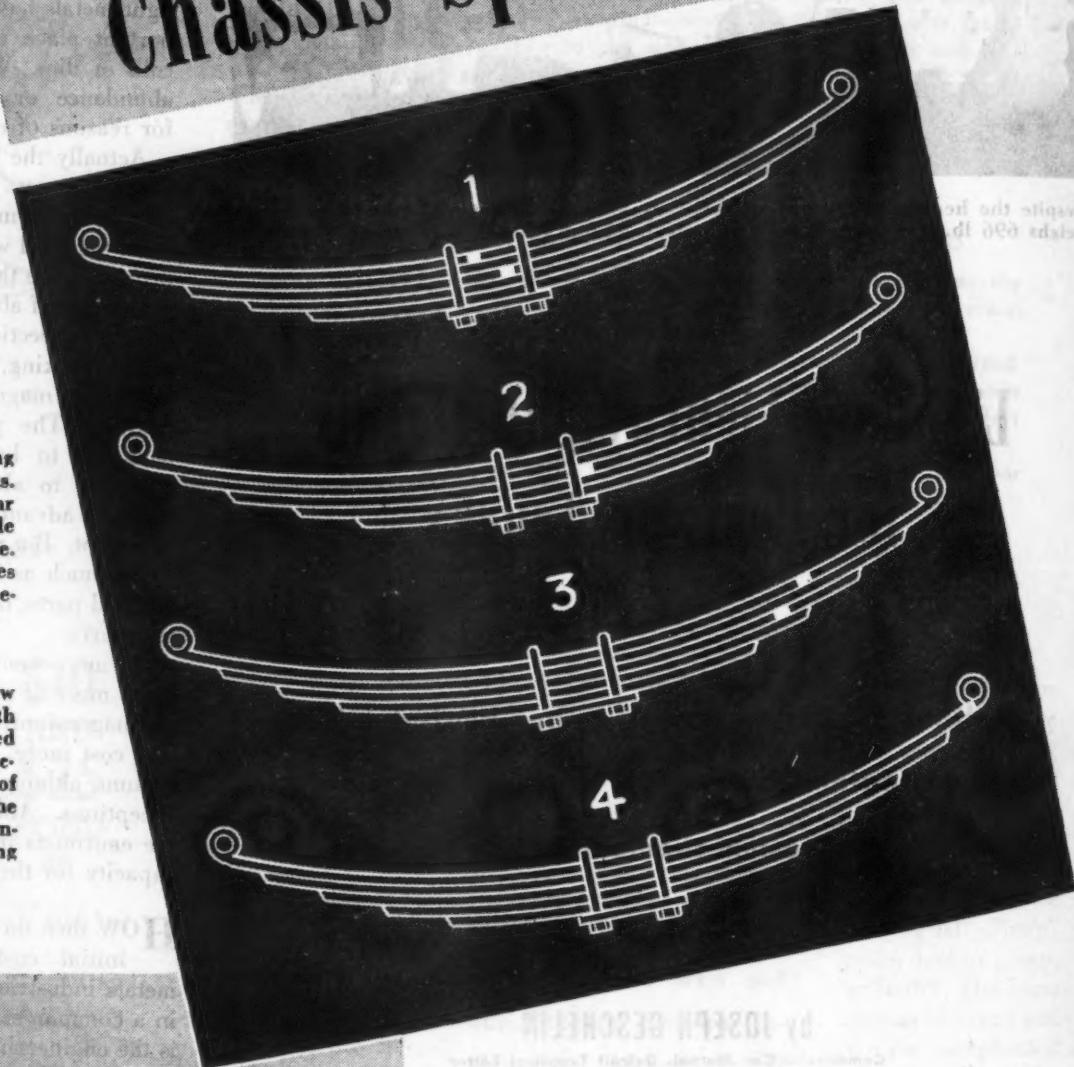
Actually the light metals are more expensive per pound than steel or cast iron or malleable iron. Moreover, the total weight saving is not in proportion to the difference in weight per pound of aluminum and cast iron or steel. Section for section, generally speaking, the part made of aluminum or magnesium must be made heavier. The pattern for a major part has to be "beefed up" when changing to aluminum. So you do not take advantage of the full saving in weight. But you can reduce *weight* by as much as 50 per cent on highly stressed parts, much more on decorative parts.

In any event, the resulting part costs more if made from aluminum or magnesium; in fact, magnesium will cost more, in general, than aluminum, although there may be some exceptions. And this is true despite the enormous increase in production capacity for the raw materials.

**H**OW then do we justify the higher initial cost? Well, the light metals industries have gone about it in a common-sense way, which really is the engineering approach. First of all, where is weight saving important? Where will weight reduction pay off? The answer is obvious to fleetmen—on heavy duty road vehicles, trucks, trailers, buses. Hampered by restrictions as to size and gross weight of the vehicle, the fleetman is forced to seek every means of increasing the useful payload within the limits of gross weight. Any reduction that can be made in the dead weight of the vehicle and chassis leaves exactly that much more for the

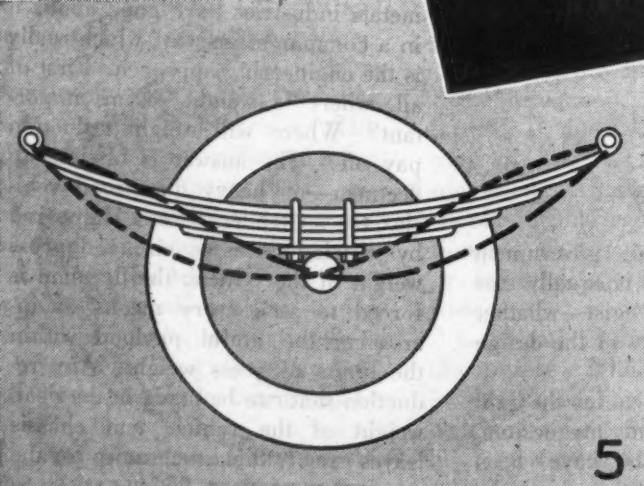
(TURN TO PAGE 96, PLEASE)

# FIVE REASONS Why Chassis Springs Break



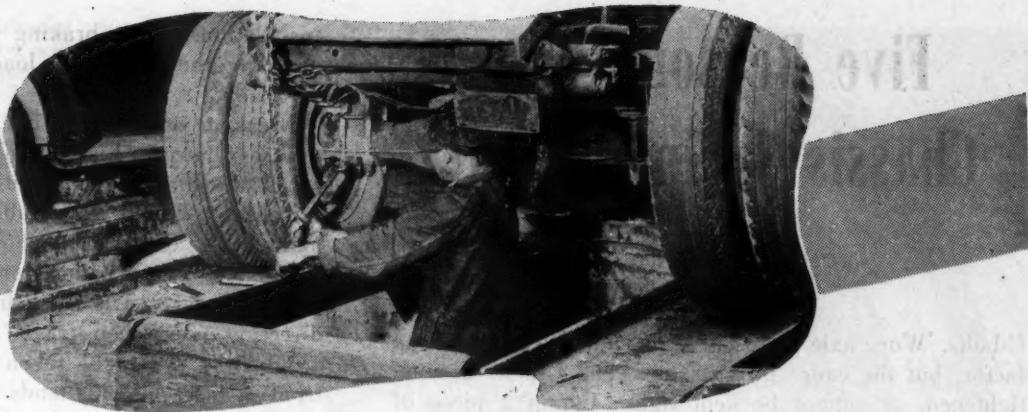
Right, drawings showing common breakage points. (1) at center, (2) near plate, (3) between axle and eye, (4) at the eye. Article outlines the causes for breakage at these specific points

Below, schematic view of spring suspension with Hotchkiss drive. Dotted line, tendency when accelerating. (Direction of vehicle travel is to the right.) Dash line tendency when applying the brakes



**EDITOR'S NOTE:** This article has been excerpted from a paper by the author presented at the T & M meeting of the Pittsburgh Section of SAE. The balance of the paper, dealing with formulas for determining spring loads and redesigning springs to carry bigger loads, will appear in the July issue.

**T**HE leaf spring suspension provided on most vehicles is the best suspension known for the purpose. The designs of the springs have been established by experts, and the springs carry the designed load satis-



Inspect and tighten U-bolts in a periodic check-up of chassis springs

**Trouble generally can be diagnosed by the location of the breaks. Costly repetition can be avoided by correct driving, eliminating overloading and proper maintenance**

by ROBERT N. AUSTEN

The Iron City Spring Co., Pittsburgh, Pa.

#### POINTERS ON PREVENTING SPRING BREAKAGE

Chassis spring breakage is greater now than before the war, says Mr. Austen, an authority on springs. Not only does he explain the general reasons, but supplies data for determining specific causes.

He follows through with a number of pointers on how to prevent such breaks. Most fleet maintenance men are familiar with some of the mechanical faults outlined, but it may not have occurred to them to put them on the PM check list. Then there are points that deal with conditions surrounding the shop or garage. The author advises, for example, "Fill up that bad curb to ramp condition that causes an extreme sideroll every time the vehicle goes in or out of your garage."

For fewer chassis spring breakages, pass this article around the shop and don't overlook the drivers.

factorily under the normal conditions in which they were expected to operate. All compromises and assumptions made in developing the original detail design, were based on a normal operation under normal conditions at a given load. However, our service experience occasionally shows some breakage, so there must be some conditions creeping into our operation that are beyond the normal figured by the designer. Remembering that most designs were developed before the war, and for conditions of that period, we face the fact that *the overload of yesterday is*

*the normal load of today.* Our trucks and buses were designed for yesterday's normal and not today's normal load. The springs were designed to give mileages long ago used up.

#### Springs Get "Fallen Arches"

FIRST of all, how old are your springs? Have they been in service so long that they have "fallen arches"? Take one out of the job and lay it on the floor with no load on it for a check. It has taken a permanent set, or settled more than 5 per cent of the designed arch. So, the ideal thing to do is to replace it with a new one. But that isn't always easy with our shortage today.

The next best thing is to reset it to the original height. Be careful though, that in doing so, the cold hammer peening method is not used. Specify reset and heat treatment. By cold hammer peening, only temporary relief is obtained. By properly heat treating, a used spring that has not been too badly worn, another 60 to 80 per cent of new spring life can be obtained. This reworking of a spring should not be done more than twice to be within an economical operation.

#### Determining Breakage Causes

IF BREAKAGE is occurring, the question is, "Where on the spring is the breakage occurring repeatedly?"

(a) At the center bolt hole (b) just away from the axle and outside of the U-bolt anchorage (c) midway between the axle and the eye (d) at the base of the eye (e) or just throughout the spring generally?

(a) Breakage at the center or between the U-bolts, Fig. 1, is almost generally agreed to be the result of loose (TURN TO NEXT PAGE, PLEASE)

# Five Reasons Why Chassis Springs Break

(Continued from Page 55)

U-bolts. Worn axle pads and seats can be a contributing factor, but the cause is the same. The U-bolts are not tightened, or cannot be kept tight. Clamp a piece of wood in a vise and break the wood by deflecting the end, and it will never break between the jaws of the vise. Likewise, with tight U-bolts, no deflection occurs on the section of the spring between the bolts and no fatigue and breakage occurs.

Well, "How tight should U-bolts be pulled?" It is an established fact, that these bolts should be pulled up with a load greater than they carry in service. A box socket wrench, either manual or air operated, is advised for running up the nuts, but in addition, a piece of pipe over the handle for the final set is necessary.

(b) Breakage at the axle, but beyond the area clamped by the U-bolt, Fig. 2, is caused by a sharp shearing edge of the axle seat or plate, or by improper gaging in the upper leaves of the spring where an attempt has been made to get more strength with a heavier main plate installation without considering the proper rearrangement of gaging in the lower plates.

(c) Few operators realize fully the relation between severe operating condition of brakes or clutches and spring results. Nearly all cars, buses, and trucks have Hotchkiss drive. This drive is fine for the cushioning of brake and clutch operation, but what a job it gives the spring to do. In addition to carrying the load of the vehicle, the springs must absorb the driving torque force, and braking torque force created by sudden release of clutches or application of brakes. Suppose one brake is out of adjustment, and the entire braking force is thrown on one rear wheel. The force exerted on the corresponding spring is without limit.

When brakes are applied suddenly at the same time the spring is deflected vertically, a wrap-up occurs that takes it beyond its elastic limit. It is our belief, that more springs are broken from wrap-up than any other cause. By wrap-up, we mean the tendency of the spring to follow the wheel rotation when brakes are applied or clutches engaged, as shown in Fig. 5. The degree of wrap-up in severe cases is as high as 7 per cent. The resultant stresses in the spring are unlimited and are as proportionately high as the deceleration was abrupt. The result usually is evident in breakage occurring mid-way between the axle and the eye of the spring. The corrective measures are self evident and usually are beyond the scope of the spring maintenance engineer.

(d) The eye or end fitting area of a spring is the most critical part, for it is the point of attachment to the frame and is responsible for maintaining the spring in position to act as the radius torque arm. It is the only rigid point of contact between the axle and the frame in most installations and, so, must withstand all the thrust from driving in the rear installation or from road shocks in most front

installations, resist braking torque in both cases, while accepting the force of the load in its normal spring action vertically.

Breakage occurring at the base of the eye and parallel to it, as shown in Fig. 4, can be attributed usually to any or all of the above contributing factors. When the front wheel hits a bump, the resultant thrust is taken along the main plate. The shackle bolt is pushing the front end assembly forward with a force applied against the front half of the eye. The road thrust coming in the opposite direction must then travel along the main plate and around the eye to be taken by the shackle bolt at the front of the eye. This tends to unroll the eye, as pulling a pencil out from your hand and under your finger tips. If brake application comes at the same time the bump is encountered, the wrap-up at the axle exaggerates the tendency to unroll the eye. Driving thrust with a severe clutch engagement has the same effect on the front eye of the rear spring.

Without adequate protection at the eyes, the resultant broken eye can cause serious accidents or road delays. The first corrective step is to use wrapper plates around the eyes. This isn't particularly a preventive step, but is definitely a safety factor. Investigate the possibility of using a heavier gage main plate by checking with the stress formula to be given later.

There is another type eye fracture that is seldom discussed, yet is a source of much trouble if not considered. When breaks at the base of the eye are not parallel to the eye, but rather, are diagonal to it at about 20 deg. or 30 deg., it is most apt to be result of a torsional stress. This is caused by the spring being twisted by excessive sideroll, producing a transverse stress in the spring. Proper loading or more adequate capacity is the best correction, also check for worn shackles.

(e) General breakage throughout the spring is a sign of just not enough capacity usually.

## Preventive Maintenance

PREVENTIVE maintenance begins really in the office of the men such as yourselves. Check every new vehicle for its loaded condition versus spring capacity before you put it in service. This is particularly true if you have bought only a chassis and transferred a body from some other vehicle to it or had a body builder construct something of unknown weight around it.

Explain the effect of improperly adjusted brakes on springs to your service men. Fill up that bad curb to ramp condition that causes an extreme sideroll every time the vehicle goes in or out of your garage. Teach your drivers to ease up on the brakes at the same time when they hit that hole in the road.

Then put your spring maintenance to work on the inspection rack. Check lubrication of spring eyes, tighten U-bolts, look for springs that have given their mileage and are sagging or have leaves worn into one another. Watch for that plate that has cracked and remove the spring immediately before more leaves break. Every leaf in the spring has suffered the same shock that caused the weakest one to fracture.

You don't have to spend as much time grooming your springs as you do your engine, but, you will be surprised at the dividends the spring will return for just a little attention.

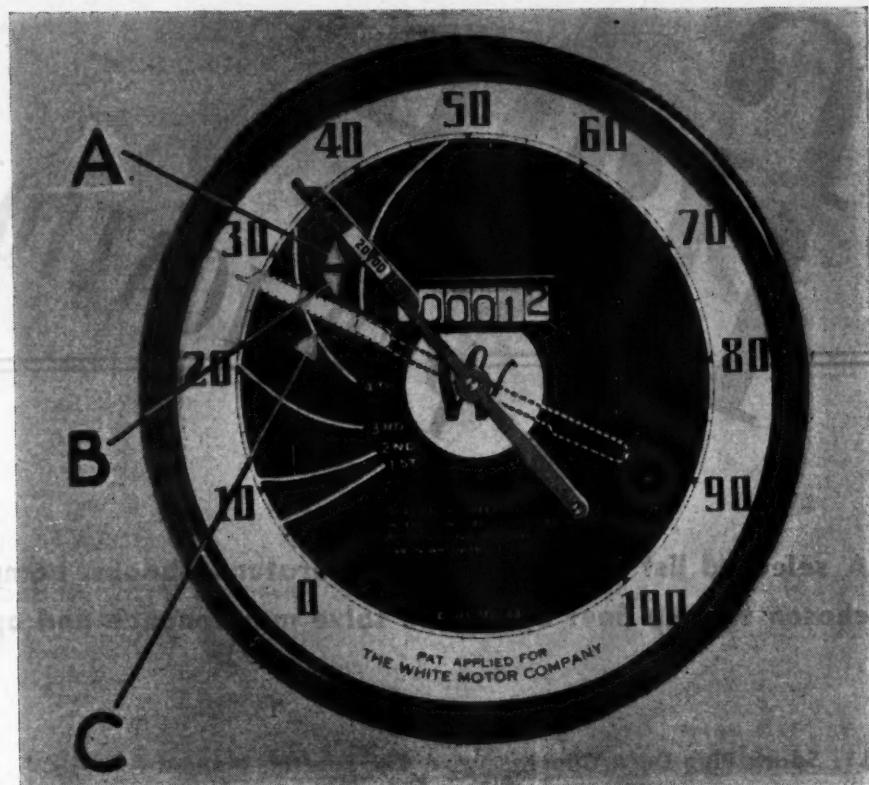
A. "Economy range" is indicated when white area of pointer is over white line of gear being used. B. If running in 5th gear, read r.p.m. on lower edge of pointer where it crosses 5th gear white line. C. For 4th gear, read r.p.m. on pointer where it crosses 4th gear white line. The same procedure is followed for lower speed gears

AS FLEET operators and most drivers know, every truck has a definite r.p.m. economy range, wherein it operates at maximum torque, horsepower and road efficiency, consistent with fuel economy. Usually the most efficient range of speed for the modern engine is between 1700 and 2400 r.p.m. Operating the engine within this speed range, results in cleaner combustion, greater gasoline mileage, better lubrication and cooling, more responsive throttle and longer engine life.

The speed of the engine is measured in revolutions per minute or commonly r.p.m. The chassis speed on the other hand is measured in miles per hour. These two speeds are related according to the transmission gear in which the truck is operated. The driver can therefore control his engine speed (r.p.m.) correctly for any given truck speed (miles per hour) by using the proper transmission gear. In order to do this the driver needs to *know his engine speed*.

This is difficult because of the extremely varying ratios between chassis speed (miles per hour) and engine speed (r.p.m.) and because the drivers have no visual means of knowing, except in a few instances, the speed of the engine in each of the gear ratios.

A separate instrument known as a tachometer which shows the r.p.m. and which is mounted on the instrument panel and driven from the engine, is often used for this purpose. The White Economy Range Finder combines the information of engine speed (r.p.m.) and chassis speed (miles per hour) on the one instrument making it possible to read the engine speed directly on the speedometer dial, which also shows the



## White Range Finder Points to Engine Economy

**New combination tachometer and speedometer aids drivers in selecting gears, saves gas, oil, and reduces engine wear**

chassis speed (miles per hour). The range finder thus serves as a guide for the driver in selecting the correct transmission gear in which to operate.

The illustrations show how this is done by means of a spiral white line on the speedometer dial for each transmission gear and a scale of engine r.p.m. which is printed along the edge of the speedometer pointer.

As the speedometer pointer moves around the dial, the edge of the pointer crosses the spiral white line for each gear at the place on the scale showing the engine r.p.m.

**Maximum Engine Speeds**  
WHEN the pointer crosses any white line at the outer end of the line, the engine speed in that (TURN TO PAGE 120, PLEASE)

# free PUBLICATIONS



**A selected list of the latest in literature—books, pamphlets, catalogs—chosen to help fleet operators solve maintenance and operating problems**

#### **L1. Spark Plug Data Chart**

A new spark plug specifications wall chart, measuring 38 x 25 in., has been prepared for fleet owners, operators and mechanics.

Lithographed in four colors, the wall chart features spark plug specifications for all makes of cars manufactured since 1933, with a special listing of specifications for automobiles made prior to 1933. In addition thermal ratings and type equivalents are listed, as are recommended spark plug gap settings for all makes.

With brilliant colors and large printing, the chart can be tacked to the shop wall for convenient reference by the mechanics. Get your free chart now by writing L1. on the free postcard.

#### **L2. Electric Tool Catalog**

A tool catalog published by a manufacturer of electric driven tools has been compiled with an eye to the maintenance and care of all electric tools. In fact part of the 42-page, 8½ x 10½-in. catalog is devoted to the care of such tools as saws, drills, sanders, grinders, etc. This division entitled, "How to get the most from your electric tools" covers maintenance exclusively.

Many shopmen will find these hints and suggestions profitable in prolonging the life of their electric tools.

Write L2. on the free postcard and a copy will be mailed to you.

#### **L3. Bearing Manual**

A 20-page manual has been prepared by three special engineering committees representing the leading anti-friction bearing manufacturers. These committees are the Standards Committees of the Anti-Friction Bearing industry. The manual was compiled to meet the widespread demand for sound bearing maintenance and conservation practices. The data is strictly factual. The recommended procedures are authoritative and cover both ball and roller maintenance by 29 different manufacturers.

This comprehensive manual certainly should be in the hands of every fleet mechanic. The instructions begin with diagrams showing the nomenclature of the ball bearing. They are then listed according to types, with illustrations showing just how to handle each in assembly or disassembly.

Washing of the bearing is taken up in detail, the importance of cleanliness being stressed throughout.

There are exactly 86 illustrations and photographs in this 8½ x 11-in. manual. Instructions are so clear and simple that a few minutes' study will enable even a beginner to accomplish first-class bearing service. Write L3. on the card for your copy.

#### **L4. Booklet on Oil Properties**

An eight-page publication on viscosity and viscosity indexes has been issued by a leading oil company.

The publication is technical in its discussion of viscosity, the measure of an oil's relative fluidity at a predetermined temperature. "Viscosity tests," the data points out, "have proved of value as a means of estimating the physical ability of a lubricating oil to maintain lubrication under any set conditions of operating speed, pressure and temperature. It is of distinct importance to have a clear understanding of this test in view of the relation of fluid or internal friction to power consumption."

Many such interesting facts are presented from which fleet operators should learn much about the properties of oils and in selecting lubricants for truck and shop use. A copy will be sent to anyone writing L4. on the free postcard.

#### **L5. Bearing Specifications Data**

Realizing the necessity for an industry standard specifications covering types of bearings, data have compiled for a unit basic part numbering system, inspections, tests, and simplified the form of tabulating dimensional data. This information has been prepared in the form of a ball and roller specifications, with the purpose in view of standardizing anti-friction bearing specifications.

This 16-page loose leaf booklet is now ready for those fleetmen and mechanics interested. Write L5. on the free postcard for a copy.

(TURN TO PAGE 160, PLEASE)



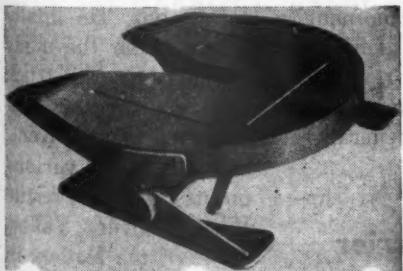
# new PRODUCTS

**The newest in replacement parts, accessories, shop equipment and supplies.**  
**For more details of products described or advertised, use free postcard**

## P71. Wedge-Jaw Fifth Wheel

Interest has been shown by the motor transport industry in a new steel-fabricated fifth wheel being manufactured by Fontaine Truck Equipment Co., Birmingham, Ala. A feature of this improved fifth wheel is a patented wedge-type jaw construction which prevents slack in the grip of the jaws against the king pin.

This new welded fifth wheel is fabricated from  $\frac{3}{8}$ -in. mild steel plate and therefore does not crack or break under strain as readily as do cast steel fifth wheels. In case breakage does occur, repair is comparatively simple by welding. With this Fontaine fifth wheel, there is no need for rubber cushions and springs to take up slack caused by worn king pin or other worn parts, because the jaws are self-adjusting. Tests have shown

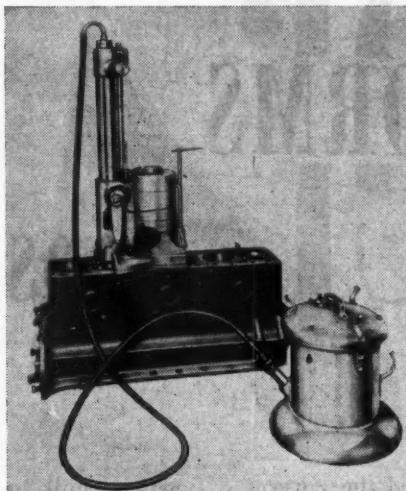


that the king pin remains locked even when handle lock, handle spring, handle, jaw spring and even one jaw all are removed. Under load, the strain tends to pull the jaws tighter.

**Use Free Postcard For More Details.**

## P72. Vacuum Chip Remover

Trading under the picturesque name of "Sucker-Outer," a high-velocity, multi-stage vacuum unit is



now available on two models in the line of "Per-Fect-O" Boring Bars built by the Van Norman Co. of Springfield, Mass. This chip-removing system sucks up all chips from the tool-point and whisks them out into the compact container shown at the right of the motor block. This means that chips are kept out of the oil-holes in the crankshaft, and out of the crankcase.

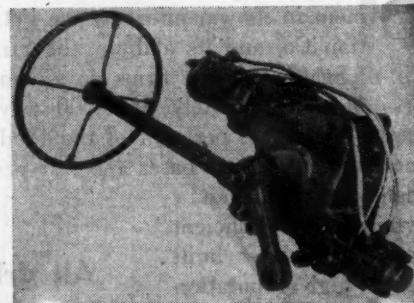
The two bars now made for use with the vacuum attachment are the No. 777-S with a capacity of 2.6 in. to 5.343 in. in cylinder diameters, and depths to 14 in.; and the No.

944-S, with capacity of 2.2 in. to 4.260 in., and depths to 10 in.  
**Use Free Postcard For More Details.**

## P73. Hydraulic Steering Gear

A new hydraulic power steering device which can be used after victory to overcome such familiar problems as road shock, driver fatigue and parking problems has been developed by the Bendix Aviation Corp., South Bend, Ind. Several new features of the hydraulic powered control were privately developed by F. W. Davis, consulting engineer.

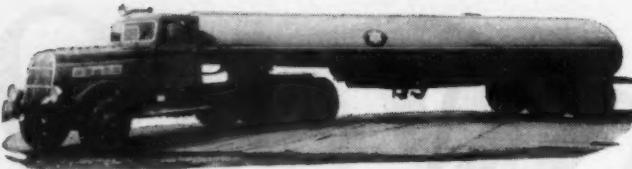
In operation, normal turning of the steering wheel opens or closes the automatic control valve which is the "brain" of the unit, to produce corresponding movements of the front wheels. The new device permits easy



maneuvering and parking in restricted places, eliminates tendency toward wandering and even the common bugaboo, front wheel shimmy.

**(TURN TO PAGE 123, PLEASE)**

**Use Free Postcard For More Details.**



### THESE DRIVERS HAVE TO BE GOOD

"The handling of our big trucks and trailers around Blewett and Snoqualmie Pass is no simple affair. We can find plenty of drivers, but only a small percentage of them are able to fill the bill," says Lamar Strain, vice-president of this Northwest fleet operation.

To be sure that the drivers employed will fill the bill, extreme care is used in their selection and training. To insure uniformity of results, requirements outlined on the first three forms illustrated in the article are strictly adhered to. This is only the beginning.

To insure good results every day in the care of the equipment and making schedules promptly, other forms are employed. The good results achieved by the use of these forms, described in the article, are worth close study.

# Driver Control Forms Drive Boost Operating

**S**TRONG cooperation has been accorded the government in its war effort by the Petroleum Transportation Co. and its affiliate, the Strain Transportation Co. of Seattle. These firms do a combined annual business of approximately \$400,000 a year with their 40 units. About 60 per cent of the goods that they haul is for army camps, air bases and war projects. They pride themselves on their prompt and efficient service and have built up a high reputation for strict reliability.

Asal Strain, the founder of the two companies, is one of the pioneer truck drivers of the northwest. When he started

**All driver activities of Northwest carrier are reported in detail on forms designed to determine and eliminate road troubles and other causes for any transportation delays**

PETROLEUM TRANSPORTATION COMPANY Seattle		STUDENT TRIP REPORT
Student's Name	John Jones	Date, March 5, 1945
Trip From	Bethel	To Bellingham
Drove From	Seattle	To Bellingham
Truck No.	12345	Weather Condition
What is your opinion of student?		
Does he drive safely on the highway? <input checked="" type="checkbox"/> Yes		
Does he object to instructions? <input checked="" type="checkbox"/> No		
Does he keep vehicle well over to right side of roadway? <input checked="" type="checkbox"/> Yes		
Does he cut corners? <input checked="" type="checkbox"/> No		
Does he maintain a moderate speed or do you have to caution him for going too fast? <input checked="" type="checkbox"/> Yes		
Driving Ability		
Does he lose time on the road? <input checked="" type="checkbox"/> No		
Does he make abrupt or smooth stops? <input checked="" type="checkbox"/> Smooth		
Does he know how to shift gears? <input checked="" type="checkbox"/> Yes		
Has he been instructed to start all trucks in low gear at all times? <input checked="" type="checkbox"/> No		
Has he been instructed to use the proper amount of oil? <input checked="" type="checkbox"/> Yes		
Has he been instructed in starting and warming up cold motors, gas? <input checked="" type="checkbox"/> Diesel		
Has he been instructed and cautioned regarding following too close? <input checked="" type="checkbox"/> No		
Has he been instructed regarding overdrive? <input checked="" type="checkbox"/> Shifter controls?		
Has he been instructed regarding reverse operations? <input checked="" type="checkbox"/> No		
Has he been instructed regarding first aid kits? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding tools and location of same in trucks? <input checked="" type="checkbox"/> Yes		
Does he know how to change a tire? <input checked="" type="checkbox"/> Yes		
Has he been instructed in the use of the air horn? <input checked="" type="checkbox"/> Yes		
Has he been instructed in the use of headlights? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding economy of lights, starters, other electrical units? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding tires? <input checked="" type="checkbox"/> Oil? Recording tire changes? <input checked="" type="checkbox"/> No		
Has he been instructed regarding starting motor run? <input checked="" type="checkbox"/> Leaving truck in gear		
Location of service, tire houses, etc.? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding the method of reporting truck condition? <input checked="" type="checkbox"/> Yes		
Has he been instructed who to call in case of road failure? <input checked="" type="checkbox"/> Accidents		
Has he been instructed regarding the form to use in reporting road failure or delay? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding the form to use in reporting accidents or unusual incidents? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding trip reports? <input checked="" type="checkbox"/> Yes Available for duty? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding the driver's log? <input checked="" type="checkbox"/> Yes Has he been furnished I.C.C. rules? <input checked="" type="checkbox"/> Yes		
Has he been instructed regarding loading and unloading operations? <input checked="" type="checkbox"/> Yes		
Comments Use reverse side if necessary		
<i>He looks Excellent</i>		
Student	John Jones	Instructor BURCH DeLoPPE Jr.

Fig. 1. The 8 x 11-in. form which is filled out by the driver's instructor. It contains a detailed analysis of applicant's aptitudes, skill and ability

# Boost Operating

to haul milk to Northwestern Dairy in Seattle in 1912, one of his fellow drivers on the road was Hal Roach, who has since become prominent in Hollywood. He finally launched a business of his own in Kent under the name of the Strain Transportation Co. with only one Alco truck in 1913. As time went on, he bought more trucks and became a carrier of general freight between Seattle, Kent, Auburn and various points in the fertile White River Valley. Some of the leaders in the motor freight business in the northwest are former employees of Mr. Strain.

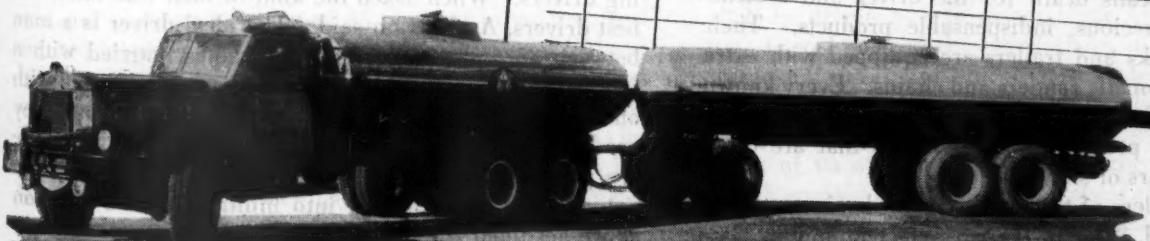
In 1928, Mr. Strain founded the Petroleum (CONT'D ON PAGE 62)

DRIVER RECORD CARD													
De Laappe.													
De Laappe-Burch Leroy													
650 1/2 Holly Place Seattle W													
651-097452 We 7652													
LELAH MARY De Laappe													
650 1/2 Holly Place, Seattle Wm gray													
RELATIONSHIP: WIFE													
DRIVERS LICENSES													
YEAR	GT	NUMBER	EXPIRES	YEAR	GT	NUMBER	EXPIRES	YEAR	GT	NUMBER	EXPIRES		
19			19					19					
19			19					19					
19			19					19					
MILEAGE RECORD													
IF AN ACCIDENT IN ANY MONTH, SHADE OR OUTLINE THE SPACE FOR THAT MONTH. USING BLUE FOR "NON CHARGEABLE", RED FOR "CHARGEABLE".													
YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
1939	4236	3598	31650	3160	3596	2916	3850	3416	4214	3374	4245	3254	43,544
1940	3696	3160	3520	4641	3516	3336	2906	2344	4246	3724	3656	3030	42,397
1941	3120	3244	3432	3973	3897	2837	4634	4315	4340	4460	4305	4397	47,167
1942	3692	2041	5946	4429	5326	4715	4986	4244	6167	7800	4700	55016	
1943	57423	2589		6277	7340	6479			5884	5433	3994	1903	45,262
1944	4489	3710	4981	6314	6710	4879	4462	2542	67770	29162	4153	4223	68,542
1945	29452												
19													
19													
ACCIDENT RECORD													
DATE OF ACCIDENT	COMPANY VEHICLES		TYPE OF ACCIDENT										
	TRUCK OR TRACTOR	TRAILER											
IN COLUMN "A" AND "B" FOR RESERVE													
AVOIDABLE													
YES													

Fig. 2. Driver record card, 9 x 6 in., contains personal information, with his description, address, test data, mileage record

# Efficiency

by WARREN E. CRANE



# Driver CONTROL FORMS DRIVER

## Boost Operating Efficiency

(Continued from Page 61)

Fig. 4, right. Trip record card, 4 x 8½ in. Fig. 5, top. Long distance phone call blanks for recording calls, reasons and charges. Fig. 6. Overtime blanks for recording extra work causes

Transportation Co., a subsidiary institution. The present officers of the firm are Asal Strain, president; Lamar Strain, vice-president, and Homer J. Testu, secretary and treasurer. It operates seventeen diesel engined trucks and seventeen trailers. It transports gasoline and diesel oil from Seattle to Bellingham, Ellensburg and all parts of the state of Washington, to Portland and northern Oregon cities, Lewiston, Wallace, Osborne, Coeur d'Alene and various communities in northern Idaho.

At the present time, the Strain Transportation Co. operates six trucks including two with semi-trailers.

The Petroleum Transportation Co. has outgrown its parent organization and covers the northwest with its big units that haul as high as 6900 gal. of petroleum products. It has a very dangerous job for it carries gasoline over the hairpin curves of Blewett Pass where the slightest miscalculation means death for the driver and destruction for their precious, indispensable products. Their big gasoline trucks and trailers are equipped with extra large brakes, automatic sanders and chains. Every known precaution is taken to make travel as safe as possible for every truck as it proceeds over highways that are often covered with layers of snow, sleet and ice.

One of the leaders of the motor freight business on the Pacific Coast said, "One of the most efficient and success-

6

PETROLEUM TRANSPORTATION COMPANY  
TRIP RECORD

Truck No. 31 Date 3-5-45  
Oil Co. Loaded on at Seattle  
Town Loaded on at Union  
Oil Co. Del'd to Bellingham  
Town Del'd to Seattle  
Arr. Ld. Point 9:00  
Arr. Ld. Point 9:00  
Started from Seattle  
6000  
Cals. Rec'd. Kind  
Cals. Rec'd. Kind  
Date Loaded 3-5-45 Date Unloaded 3-5-45  
Time Started Work 7:30 A.M.  
Time Finish Work 4:00 P.M.  
Hours on Duty 8 hrs. 30 Min.  
Leave Time 10:00 Min.  
Time Loading 1 hr. 30 Min.  
Time Unloading 2 hrs. 30 Min.  
Arrive Unloading Point 11:30 A.M.  
Leave Unloading Point 2:00 P.M.  
Speedometer Read. Start  
Speedometer Read. Stop  
Total Miles Run 180  
Tire Change 1 Out Jack  
Cals. Gas Bought 25  
Cals. Diesel Bought 25  
Qts. Oil Bought 1099  
Rains Taken  
Duties 6 hrs.  
Remarks  
Driver Blewett Construction  
B.R.C.H. DE LARPE  
USE REVERSE SIDE FOR REMARKS

5

PETROLEUM TRANSPORTATION COMPANY  
LONG DISTANCE PHONE CALLS

Check here if collect:  Call Made From Phone Number 324  
Station Called Bellingham Date 3-5-45  
Name of Person Called or Talked To Joe Doe Phone Number MA 321  
Purpose of Call Home of carnival  
G.O. INSTRUCTIONS: This report must be filled out for every Long Distance Call made.

Signed Busch

6

PETROLEUM TRANSPORTATION COMPANY  
1100 Alaskan Way  
SEATTLE 1, WASHINGTON  
Date 3-5-45

Key John Doe  
Address Union Oil Co - Bellingham  
Overtime 2 hrs. Min. 10:00 A.M.  
Act. of Work Unloading  
Truck No. 23 Arrive Time 8 p.m. Leave Time 10 p.m.  
Signed John Doe Workman  
Other

ful operations in the northwest is that of the Strain Transportation Co. and the Petroleum Transportation Co. of Seattle. Even though they are our competitors, I have a great deal of respect for them. They are clean competition and they certainly know the business from top to bottom."

Asal Strain occupies a unique office in a block-wide freight depot facing on Elliott Bay in Seattle. It is a room with green and brown paintings on the wall depicting the development of transportation from the earliest day to the present time. The various pictures show first the primitive toter of a gun on foot; second, the Indian on a horse hauling a crude Squaw Wagon behind him; third, an early day motor truck; fourth, a giant gasoline truck; fifth, a mighty gasoline truck with a big trailer and, finally, a futuristic building with a landing field on its roof—helicopters, Zeppelins and cargo planes above it and landing on its roof.

### Driver Selection and Training

One of the secrets of the Petroleum Transportation Co.'s success is its extreme care in selecting and training drivers. When asked the kind of men who make the best drivers, Asal Strain said, "The ideal driver is a man between 35 and 40 years of age who is married with a family and a home of his own. We have less trouble with our married drivers than our single ones, because they are less likely to change from one job to another. We are partial now to men of 40 years or over as they are not as likely to be called into military service as soon as we get them trained."

## HOW MANAGEMENT CONTROLS EFFICIENCY

A study of the forms reproduced in this article will show how this fleet operator maintains top operating efficiency. The first three forms not only help select good drivers but are useful for promotions, safety talks, layoffs and similar purposes.

On these pages the forms are designed to keep an accurate record of drivers' time, and tire and vehicle condition. If all goes well on a trip, the driver merely fills out two forms—Trip Record, Fig. 4, and Truck Report, Fig. 9. If trouble is encountered, one or all the remaining forms will show the cause and enable management to take the necessary corrective measures.

The company keeps very accurate track of its drivers and has found that it has paid them to do this. After he applies for a position, the prospective driver is placed in charge of Burch DeLappe, Jr. the company's break-in driver, who takes him out on the highway and shows him many of the finer details of the operation. He is placed under very careful and painstaking supervision. After the instructor has completed his course of teaching, he has to fill out a comprehensive, 8x11 in. sheet, Fig. 1, containing spaces for a detailed analysis of the applicant's aptitude and ability as shown by his willingness to take suggestions and his skill in following instructions. No newcomer is put on the payroll without the okay of the break-in driver. Furthermore, his recommendation has an important bearing upon the company's decision to hire a new man.

"We do everything possible to make our trucks and trailers safe," said Lamar Strain. "We emphasize the fact to a new driver that when he takes one of our diesel oil trucks and big trailers holding several thousand gallons of gasoline out of the garage, he is entrusted with \$16,000 to \$18,000. He is also given careful instruction in the proper handling of bills of lading and the checking of equipment at various stations along the route.

"The handling of our big trucks and trailers around Blewett and Snoqualmie Pass is no simple affair. We can find plenty of drivers, but only a small percentage of them are able to fill the bill. Since the beginning of the war, our business has jumped 35 per cent in volume, and our new equipment has gone up only 14 per cent. About 16 per cent of our personnel has gone into the armed services, so we have had to break in several new drivers. The overall cost of operating our 17 gasoline trucks, including gas, oil and repairs, is very low when our big loads are considered. We have found the diesel engines very satisfactory for long, hard hauls over mountains."

**PETROLEUM TRANSPORTATION COMPANY**

**DELAY REPORT**

7

B/L No. 3-5-45

Truck No. 23 Date 3-5-45

Starting Delayed Time 8:00 A.M. P.M.

Finishing Delayed Time 8:30 A.M. P.M.

Delayed Hrs. 30 Min.

CAUSE OF DELAY:

Loading  Unloading  Other Causes

Reason for Delay (Full Details)

*Slow Pump*

Burch DeLappe

Signature of Driver John Doe

Signature of Gasoline Oil Company Employee Lamar Strain

O.K. Dispatcher

FILL OUT IN DUPLICATE

This report must be filled out in detail covering all delays in loading, unloading or other causes.

NO OVERTIME OR BREAKDOWN TIME WILL BE PAID WITHOUT A DELAY REPORT FILLED OUT IN DETAIL

© 1945 PETROLEUM TRANSPORTATION COMPANY

**PETROLEUM TRANSPORTATION CO.**

**TRUCK REPORT**

Truck No. 18 Driver FRANK SHEPARD

Check  AIR LEAKS  
Windshield wiper broken  
Right smoke doesn't work

8

**TIRE CHANGES**

Check  Wheel Changed

Vehicle No. 18 Date Feb 19, 1945

TRUCK	TRAILER
00 00	00 00
00 00	00 00
00 00	00 00

Brand No. Tires Taken Off 251

Brand No. Tires Put On 307

Somometer Reading 344500

Station Tires Left At Seattle

Remarks:  Pending  Junked

Frank Shepard

Driver's Signature

Fig. 7, left. Driver delay report for recording time losses in loading, unloading, etc. Fig. 8. Above, a 3 1/2 x 6-in. card for keeping a record of all tire changes and dates of adjustments. Fig. 9, top. Truck condition report form, turned in by driver after each trip

The company keeps very accurate track of its drivers after they have been placed on the payroll. When a new man joins the staff, a driver record card, shown in Fig. 2, is made out on him, containing space for a description of his physical condition, appearance and the finger prints of his entire right hand. On the other side, Fig. 3, are spaces for the records of accidents, complaints, arrests, layoffs, suspensions, demotions and union affiliations.

A daily log is filled out on each driver's activities during 24 hours with space allowed for times for meals and sleeping. At the top of the sheet, which is 8 3/4 x 5 1/2 in. in size, is the following admonition, "No motor vehicle shall be driven by any driver while his ability or alertness is so impaired through fatigue, illness or any cause to make it unsafe for him to drive or to continue to drive a motor vehicle (Motor Carrier Regulations)."

Another form that helps the company to keep accurate track of its operations is a trip record card, 4x8 1/2 in., which contain spaces for all details of the starts and stops

(TURN TO PAGE 242, PLEASE)

Survey Shows

# Synthetics

## Average 70% Pre-War Mileage\*

**Experience ranges from a minimum of 40 per cent to a maximum of 90 per cent of natural rubber tires depending upon type of operation and maintenance program**

by R. A. BLAKE

General Service Manager, Tire Engineering & Service Dept., U. S. Rubber Co., Detroit

**H**OW are synthetic truck tires performing in the field?

A recent company survey across the country on the performance of synthetic truck tires in both the small and the large truck sizes shows that they are performing up to our expectations. Overall performance from synthetic truck tires range from a minimum of 40 per cent to a maximum of 90 per cent of rubber truck tires with an average of about 70 per cent. This wide variance in performance is accounted for largely by the type of operation and the tire maintenance program which is in effect. Numerous truck operators who have established and followed through a sound tire maintenance program with definite controls on such factors as loads per tire, speeds, tire inflations, proper matching of duals, correct rim size, etc., are the ones who have achieved the maximum figures mentioned above.

### Experience With Good Maintenance

Here are some typical experiences where good truck tire maintenance practices have resulted in good synthetic truck tire performances:

**HOUSTON, TEX.**—A highway operation. Operates 73 tractors and semi's and 54 straight trucks, using tire sizes 7.50-20, 8.25-20, 9.00-20 and 10.00-20. Air pressures and loads are maintained reasonably well to man-

facturers' recommendations. Average mileage on synthetic tires is 33,000 miles compared to 45,000 miles on pre-war tires. Groove cracking was a problem on pre-war tires but is not a serious problem on any make of synthetic tire probably because of correct air pressure and correct maximum load per tire. Speeds are never in excess of 45 m.p.h. with 40 m.p.h. usually the top. Has had some premature tire failures because of loose tread. Recapping of synthetic tires is satisfactory and has a permanent place in postwar plans.

**COLUMBUS, OHIO**—A highway operation. Has 3150 running wheels on tractors and trailers using tire sizes 8.25-20, 9.00-20 and 10.00-20. Uses inflations of 70 lb. inside and 75 lb. outside in all sizes. These pressures have been reduced from 80 lb. inside and 85 lb. outside. Payloads have been reduced approximately 5 per cent. Mileage on synthetic tires averages about 35,000 miles, a decrease of 20 per cent from pre-war mileage. Better than 50 per cent of the tires are recapped with good results.

**SAN FRANCISCO, CAL.**—A highway operation. Has 101 units using tire sizes 10.00-22 and 11.00-22. At present about 550 wheels are rolling on synthetic tires and so far have had remarkably few tire failures; synthetic tires averaging about 75 per cent of rubber tire performance. Wherever possible 10.00-22's have been oversized with 11.00-22's and 8-in. rims changed to 9-10 rims.

\* This article has been excerpted from a paper presented at the 16th Anniversary Meeting of the Pittsburgh Section, S.A.E.

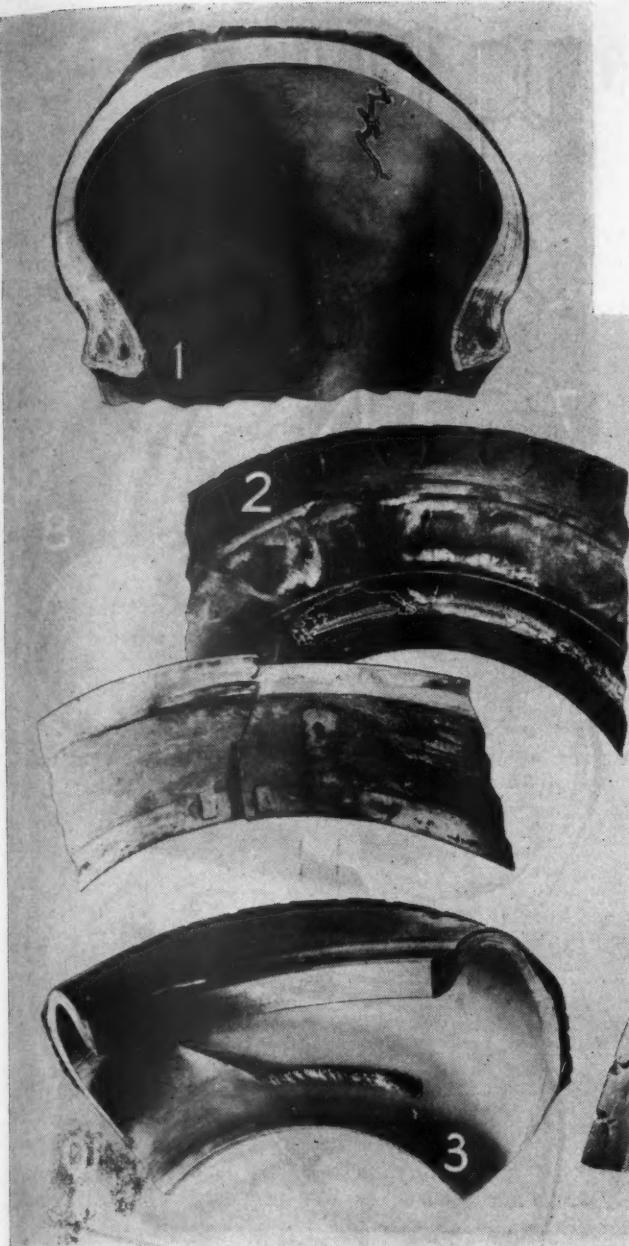


Fig. 1. Crown break, the result of overinflation which reduces deflection and contact area, causing tire to ride on crown. Fig. 2. Broken rim flange and heel failure caused by too much air pressure. Fig. 3. and 4. Result of abnormal flexing of cord body, result of overloading and underinflation. Fig. 5. Extreme tread wiping caused by excessive deflection or flattening of tire. Fig. 6. Shoulders have been wiped away more than at the center. Cause, however, is same



Inflations were dropped from 90 lb. to 75 lb. Loads and speeds are about the same. The increase in tire size in general took the overload off the tires. Sectionally repaired tires are always placed on free rolling wheels. Recapping of synthetic tires has been quite satisfactory.

**Los ANGELES, CAL.**—A city delivery operation. Has 100 vehicles using tire sizes 6.00-16 and 7.50-16. At present better than 50 per cent of the fleet is equipped with synthetic truck tires. Original tread mileage is entirely satisfactory, being within 90 per cent of that secured on rubber tires. Carcass wear and recappability are also comparable.

#### Examples of Unfavorable Experience

The above examples prove that good performance can be secured. However, some operators have not had such good results. For example:

**KOKOMO, IND.**—A highway operation. Has 60 units, tractors and trailers using tire sizes 9.00-20 and 10.00-20. (Industry recommendation is 65 and 70 lb. for these two tire sizes). Tire inflation is kept at 90 to 100 lb., and tires are overloaded between 20 and 30 per cent. Predominating tire failures result from ruptures and blowouts. Has had little experience with recapped tires because most tires fail before they reach that point. Overall performance of synthetic tires is estimated to be 40 per cent of rubber tire performance.

**DENVER, COLO.**—A highway operation. Has 65 units in operation, tractors and semi's, using tire sizes 9.00-20, 10.00-20 and 11.00-20. Owner very much dissatisfied with performance of synthetic truck tires, claiming only 40 per cent of rubber tire performance. Too many tires are lost prematurely because of groove cracking.

(TURN TO NEXT PAGE, PLEASE)

# C Survey Shows Synthetics Average 70% Pre-War Mileage

(Continued from page 65)

ing or cut growth and because of ruptures. Admits tires are consistently overloaded and considerably overinflated. Recapping experience is poor because too many tires are badly groove cracked.

HERE is a sample from Texas of what sometimes goes on without the truck operator's knowledge: This carrier was experiencing serious groove cracking or cut growth in S6 synthetic tires. He hauls oil field equipment and is 15 to 20 per cent overloaded per tire. Dual tire pressures varied from a low of 65 to a high of 105 lb. in 11.00-20 tires. The operator checked drivers and found tires were being checked and "aired" by a gasoline station attendant in spite of the fact that drivers were supplied with air gages and were supposed to check and "air" the tires on their own trucks. The situation is now remedied.

ATRUCK tire survey made in March of this year on an Illinois operation revealed the following:

100% of all 9.00-20 tires overinflated from 8 to 30%;  
85% of all 10.00-20 tires overinflated from 1 to 43%;  
90% of all 11.00-20 tires overinflated from 4 to 29%.

25 dual tires were found matched with differences in OD ranging from  $\frac{3}{4}$  in. to  $2\frac{1}{2}$  in. (Maximum recommended difference is  $\frac{1}{4}$  to  $\frac{1}{2}$  in.)

60% of tires on drive and trailer axles were overloaded from 1 to 32% because of improper load distribution.

Mechanical condition of vehicles could be improved by regular inspection for broken springs, wheel bearings, etc.

## Recapping Experience Varies

NOW how about recapping and repairing of synthetic truck tires, using synthetic camelback and repair materials? The experience of the field shows that recapping hasn't been as successful as it was with rubber. This is particularly true on highway operations. There are, however, too many highway operations where recapping is successful to assume that the fault lies altogether with the materials used.

Recapping of truck tires is economically sound when it is performed properly. This means it should be done in a shop which subscribes to the best known quality standards; in which the equipment is correctly installed

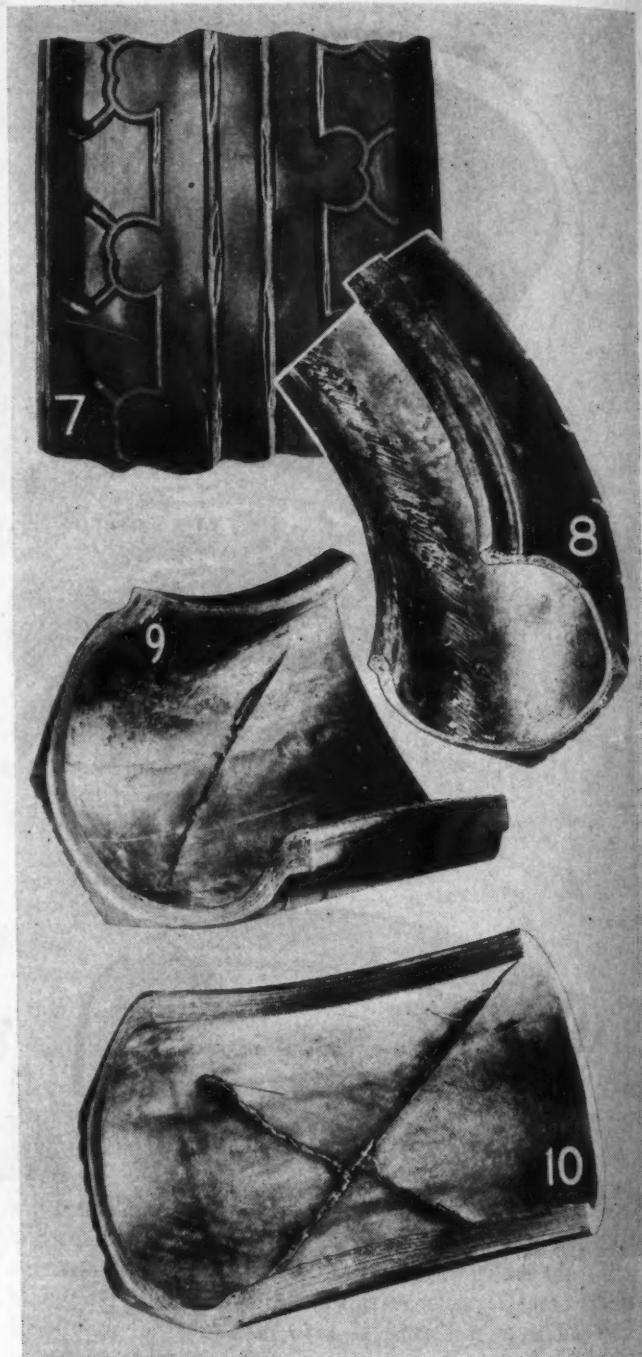


Fig. 7. Tread cracking caused by overinflation. Fig. 8. Result of running nearly flat. Weight on casing chews and chafes cords so that they become loose and broken. Figs. 9 and 10. Diagonal and "X" breaks caused by severe impacts. Outside of tire may look perfectly normal

and maintained; in which quality materials are used; and, finally, in which the workmen are trained and supervised. The truck operator, too, has the responsibility to see that only sound tires are presented for recapping and that recapped tires are placed for maximum service.

## Repairs Must Be Expertly Done

WE also have the wide variation in performance on sectionally repaired synthetic truck tires. The field experience in general has been poor on this item, and

(TURN TO PAGE 242, PLEASE)

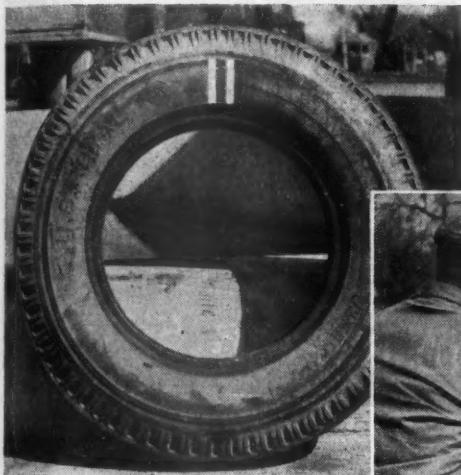
## IDENTIFICATION A PROBLEM

The use of OPA-inspection rejects for city delivery and pickups worked out successfully for this fleet, but difficulties arose when next inspection periods came due. "We had no way of proving that they were rejects," says the author. "This would involve an hour or more to remove and remount each tire . . . This was a headache."

"To eliminate making these unnecessary inspections, we started a simple plan of painting white or yellow marks on both sides of rejects to identify them."

"OPA officials not only accept this method as final proof, but approve the plan as a means of conserving tires and saving manhours for more constructive maintenance work."

This fleet also is getting good mileage from synthetics, attributed to a simple maintenance program, outlined in the article.



Above, two white lines are painted on all tires that have been vulcanized. Right, a single white line identifies those rejected for recap.



G. Wolfe

give us some relief. But this tire shortage, which was getting worse all

WHEN the tire shortage threatened to tie up some of our fleet units we had to work out some plan that would solve this problem, or at least

the time, was not the only obstacle. Changing tread-worn tires for OPA inspection was becoming a serious labor problem—taking our mechanics' valuable time that should have been used on constructive maintenance. By this I mean tires which still contained a lot of mileage, but had been rejected by our tire dealer for recapping or vulcanizing, were being used successively on our city

# Heavy-Duty Tire Rejects

## Reused for Light Duty

Rejected as unfit for repair, 14 tires keep pickups in daily service for year without trouble. OPA approves markings

by G. WOLFE

Service Manager, Hillsdale Maintenance Shop, Hillsdale, Mich.  
C. A. Conklin Truck Line, Inc., Toledo, Ohio

delivery trucks and pickup trucks.

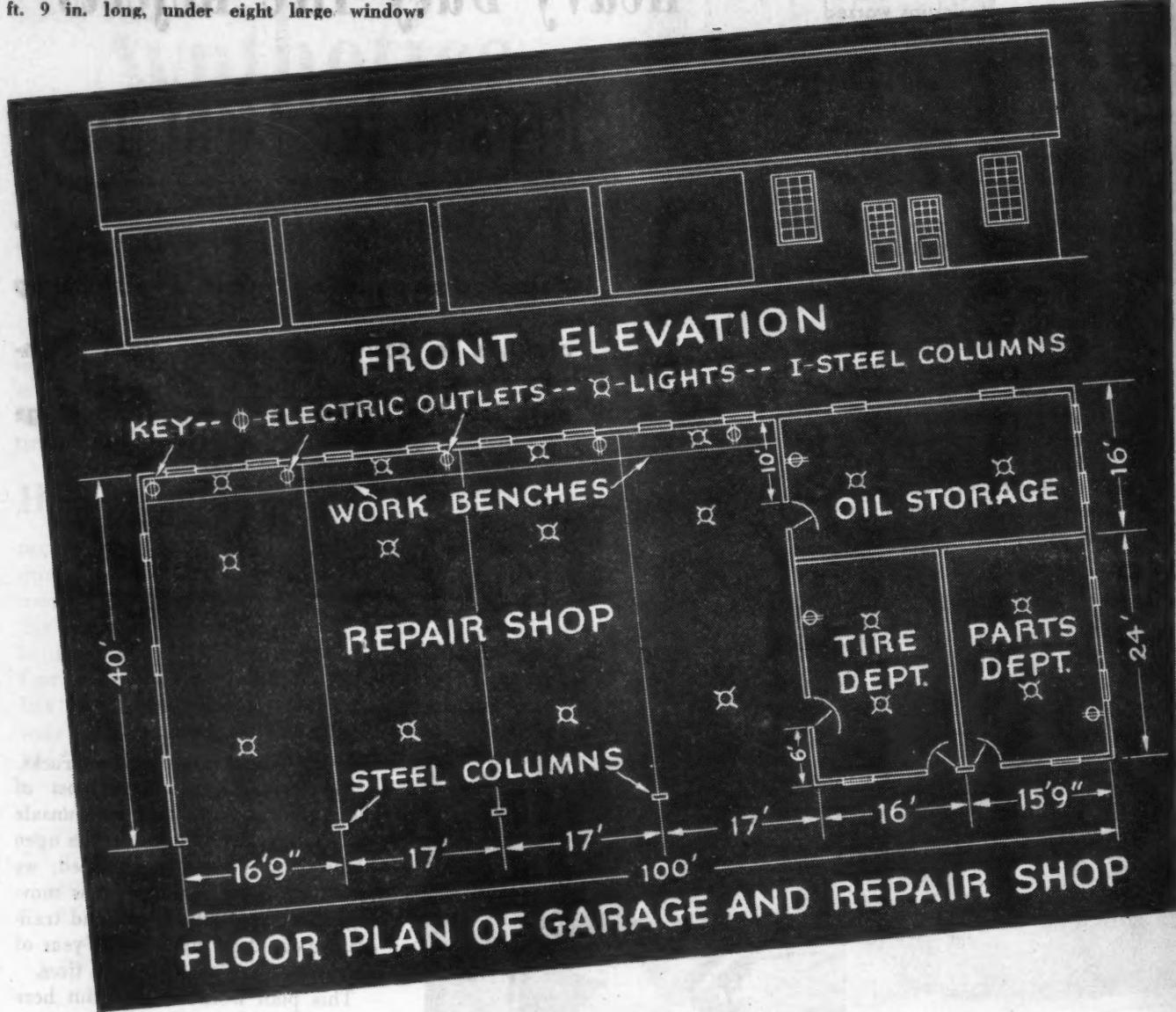
For example, although most of these rejects were unfit and unsafe for hauling heavy loads on the open highway at normal road speed, we found by using them on slow moving, short haul city trucks and trailers, we could get up to a full year of service on many of these old tires.

This plan worked well. But here was the hitch. When the OPA inspectors would come along and specify recaps for these smooth tires, we had no way of proving that they were rejects and not fit to recap. This would involve an hour or more to remove and remount each tire in that category for the inspection. This was a headache and was costing too much money for unnecessary and non-productive labor.

To eliminate making these unnecessary inspections, we started a simple plan of painting white or yellow marks on both sides of rejects to identify them. For example, on each casing that has been vulcanized we paint two lines about 6 in. long and 2 in. apart near the serial number and on both sides of the tire. A single white or yellow line is painted on each smooth or tread-worn tire in

(TURN TO PAGE 110, PLEASE)

Plan of new 100 x 40-ft. maintenance shop designed for convenient servicing as well as appearance. Note work bench in rear, 67 ft. 9 in. long, under eight large windows



#### CASH FOR SHOP PLAN IDEAS

This is the second of a series of articles dealing with postwar fleet shop layouts. The first, which appeared in the May issue, discussed ideas of some western fleet operators. This article describes one of two newly constructed terminals of a southern carrier. Illustrations are taken directly from the architect's drawings. They contain many good ideas for fleet operators who plan to be in the running when postwar competition gets tough and maintenance costs become an important item of the operator's profits or losses.

COMMERCIAL CAR JOURNAL invites its readers to contribute ideas for efficient shop layouts. All ideas will be judged on practicability of construction and maintenance efficiency. No elaborate drawings are necessary. A letter explaining the features and advantages should accompany the drawings.

All ideas accepted for publication will be paid for at regular publication rates. Send your ideas to Editor, COMMERCIAL CAR JOURNAL, Philadelphia 39, Pa.

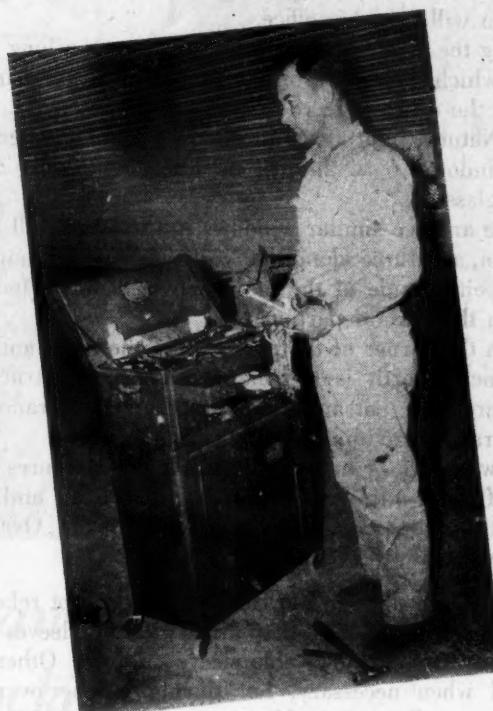
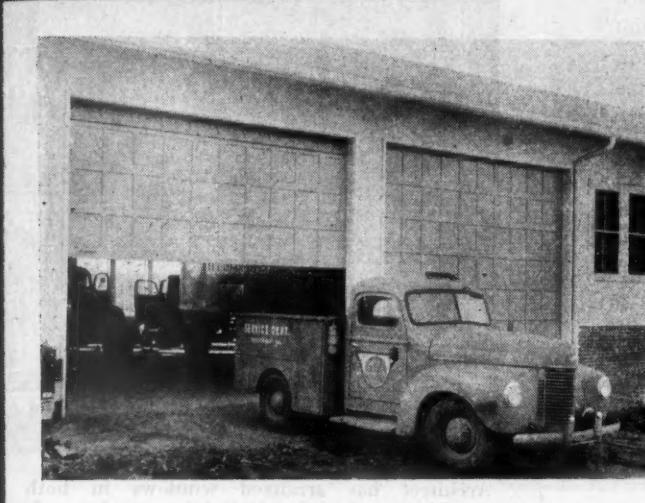
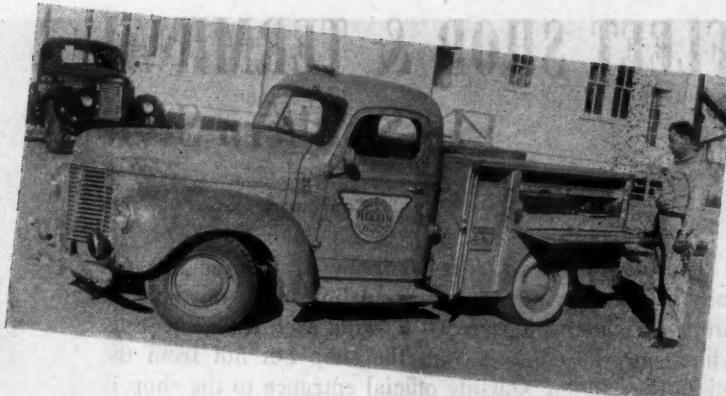
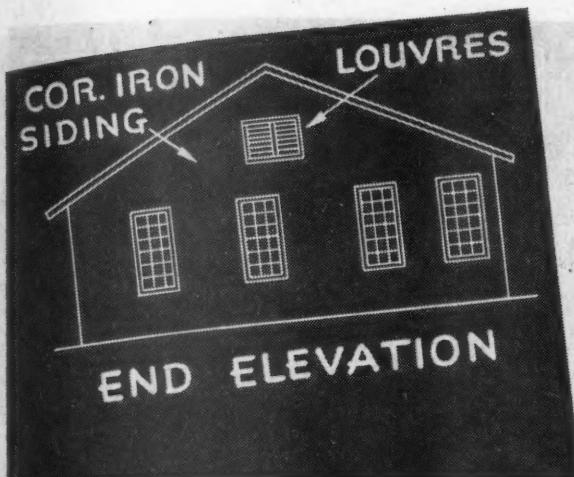
## Fleet Shop &

by L. H. HOUCK

POSTWAR plans of the Herrin Motor Lines, one of the largest interstate freight lines in the South, with general offices in Shreveport, La., have been converted into steel, brick and equipment. The blueprints have been filed and forgotten.

A new \$100,000 terminal in New Orleans and a new \$65,000 terminal in Shreveport have been opened and the repair shops are being equipped with new equipment and machinery as fast as it can be obtained.

Space and building was planned to accommodate 34-ft. tandem vans, mounted on eight 11 by 20 tires, with



Upper right. Tools for making nearly every kind of repair are carried in this "rolling tool box", as breakdowns are usually repaired on the road. Lower left. Shop doors are over-head type; large entrances provide ample clearance. Lower right. J. K. Murphy, fleet superintendent at Shreveport, with a typical portable tool kit supplied mechanics

## Terminal —Southern Style

which they expect to replace their trailers and their 28-ft. tandems in the postwar world.

Many of the new features incorporated in the Shreveport and New Orleans terminals are similar. Technical description will be confined to the New Orleans building.

THE shop is 100 ft. long and 40 ft. wide. In the South end rooms have been built for oil storage, tires and parts with an office for the shop foreman. The foreman will regulate the dispensing of parts, tires and tubes.

(TURN TO NEXT PAGE, PLEASE)

**Carrier builds modern terminal with departmentized shops replete with time- and labor-saving equipment, including portable tool boxes and portable work benches**

# FLEET SHOP & TERMINAL

## —Southern Style

(Continued from Page 71)

The oil storage room is 16 ft. by 31 ft. nine in., and may be entered from the shop. Adjoining it on the west are two rooms which are 16 ft. wide each by 24 ft. long. These may be entered from the shop but not from the oil storage room. Outside official entrance to the shop is through doors into the parts and tire rooms. Here the foreman will have his office.

Along the East wall of the shop proper is a long work-bench which extends from the North wall to the partition wall of the oil storage room. This bench is 67 ft., 9 in. long. Natural lighting is afforded by eight pivoted steel sash windows, 6 ft. and 10 in. long, containing 14 by 20-in. glass.

There are two similar windows in the same wall in the oil room, and three along the North wall of the shop, and one on either side of the main entrance to the building through the parts department.

From the corner of the partition of the parts and tires department North is the main entrance for trucks in which are three entrances providing 17-ft. clearance and one entrance providing 16 ft., 9 in.

The washrake is an open air affair and measures 40 ft. by 16 ft. and adjoins the shop on the North and completes the property line also on the North. Overhead doors will close the tractor entrances.

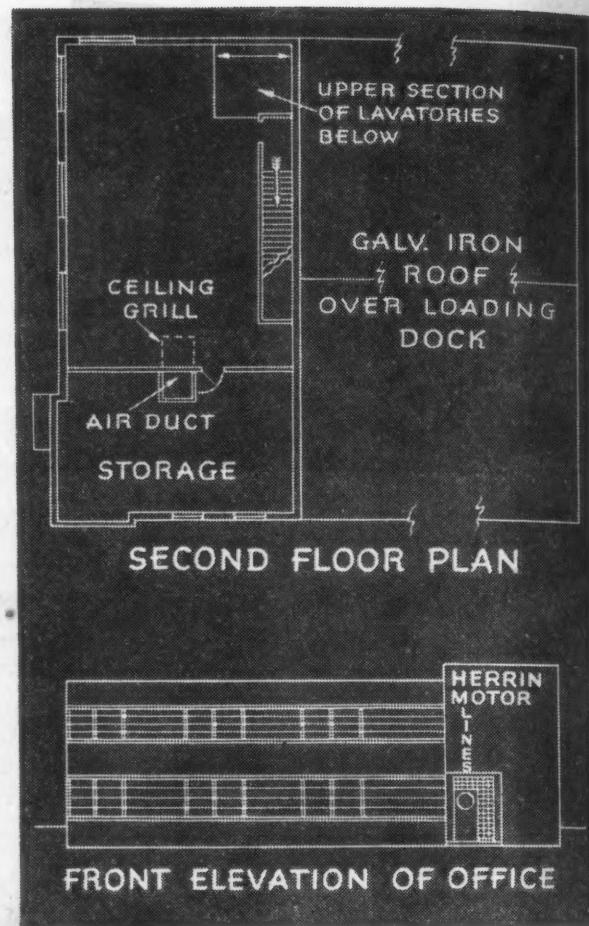
**A**LL work is done in the Herrin shops except reboring. What few tractors they had without sleeves have been converted to renewable sleeve engines. Others are rebored when necessary, but during engine overhauls they do a small amount of honing and straightening cylinder wall, if necessary.

In the new shop, the engine will be removed with a chain hoist on a rail which extends into the steam cleaning department. Here the engine will be thoroughly steam cleaned before the overhaul starts.

Each mechanic is furnished with a portable tool box and a portable steel workbench on which an individual vise is mounted. A mechanic working on a repair or overhaul job will have all he needs to do the work and will not need to leave the job to look for tools.

**F**LUORESCENT lighting has been installed throughout to give adequate and shadowless lighting. Only droplights used are the trouble lights for lighting underneath. Droplights are not needed on the general shop bench. This bench is equipped with several vises at convenient intervals for the handling of repair work.

For instance, several mechanics may be working on assembly repairs on the general bench, while other mechanics are dismantling or installing parts. The bench men will have everything they need at hand and the mechanic on the floor will be completely equipped as well. This eliminates the usual back and forth borrowing of tools, horseplay and loss of productive time, and is a system better liked by mechanics because it gives them more independence.



Architect has arranged windows in both floors to provide good natural lighting and good ventilation

Nine mechanics are employed in the New Orleans shop and seven in the Shreveport shop.

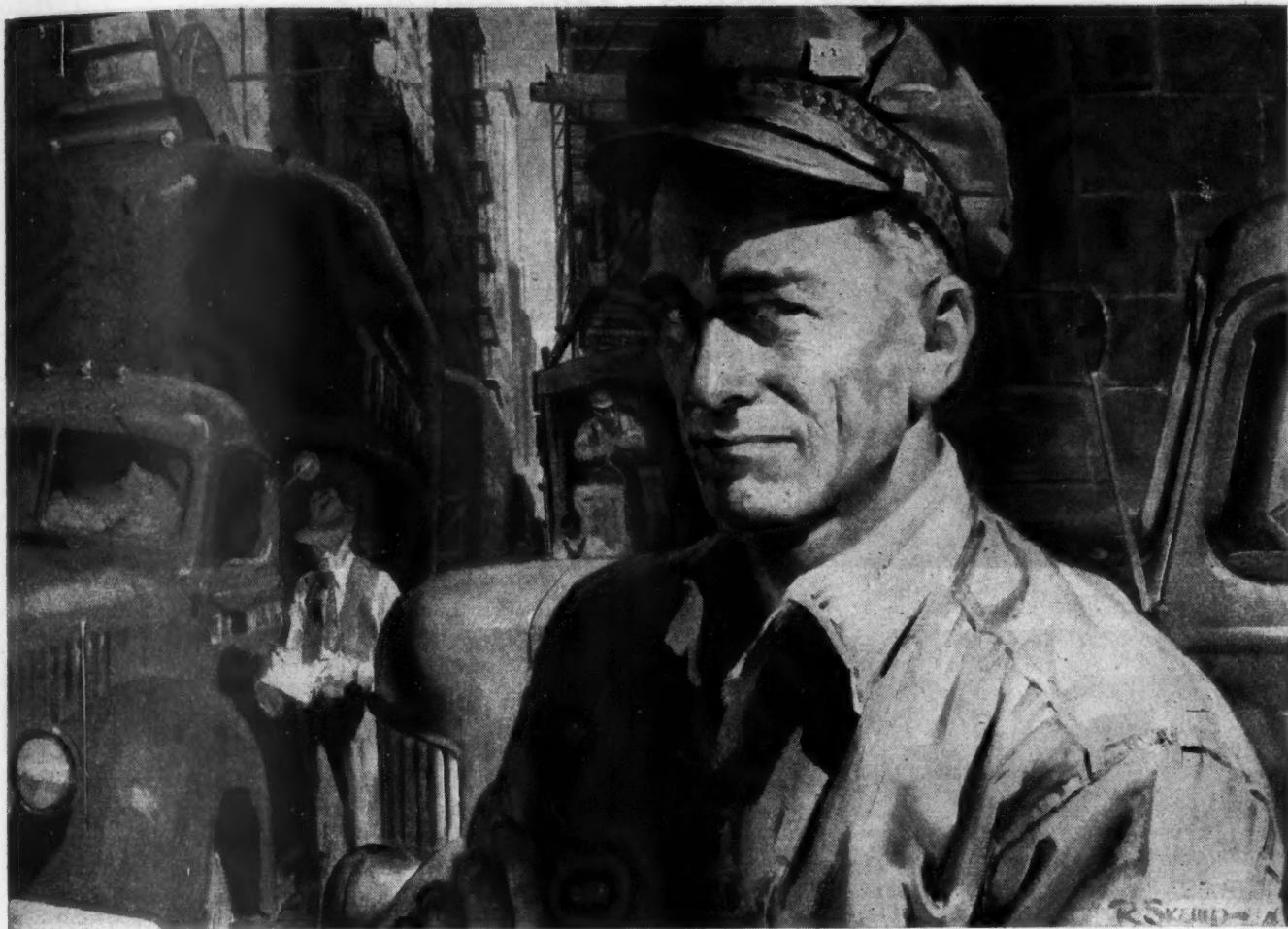
**I**NVESTMENT in the new buildings is given as \$100,000 for New Orleans and \$65,000 for Shreveport, which does not include shop equipment.

"Shop equipment will run many thousands more," U. S. Autrey, general manager for the Herrin Motor Lines, said, "because we will have every machine and tool necessary to do a complete job with the exception of reboring. Naturally, a great many of them we already had, because we've been in this business since about 1921. But what we're doing now is installing enough equipment so that a mechanic will never have to wait for another to get through with a job. We will have sufficient analyzers, which we find very efficient and time saving, so that they will handle the shop capacity."

The list of equipment used read like a catalog of the modern maintenance items available. Valve refacers, power grinders, electric and acetylene welding outfits, brake drum lathes, electric analyzers, compression testers, distributor timing lights—all in sufficient quantity to keep the shop going at full capacity.

**T**HE object of the shop is to periodically rebuild engines to prevent breakdowns on the road and to catch the troubles reported by drivers that day to prevent further trouble on the road. All is slanted to reduce to a minimum stops on the road due to mechanical failure so that all road calls will be wreck calls.

(TURN TO PAGE 74, PLEASE)



© 1945 The Studebaker Corporation

## *"No chance to unload for an hour... look how that alley is blocked!"*

### **One traffic problem postwar America will have to clear up fast**

TIME lost in attempting to move twentieth century traffic through nineteenth century streets and alleys costs the American public untold millions of dollars annually.

In one Eastern city, slow-downs in the downtown area have increased gasoline consumption 50 percent.

In a congested section of a Pacific Coast city, it takes four minutes longer today for a motor vehicle to travel nine blocks than it took a horse and buggy to cover the same route in 1910.

#### **All traffic is affected**

Just a look around in your own locality shows you that everybody is affected—private car owners as well as motor truck operators. It's obvious that something drastic must be done promptly after the

war ends. Just imagine what conditions will be like by 1950 when nearly 40 million motor vehicles will be in use!

Programs for postwar improvements in long-distance arterial highways and secondary roads have received plenty of public support. But they don't solve the real traffic congestion problem.

Well over half of all the nation's motor traffic is concentrated on city streets and in the close-up suburbs—and this means that local planning to remove bottlenecks and speed up vehicle movement cannot begin too soon.

#### **Concerted action necessary**

As one of America's oldest manufacturers of transportation equipment, Studebaker compliments the owners and drivers of both private

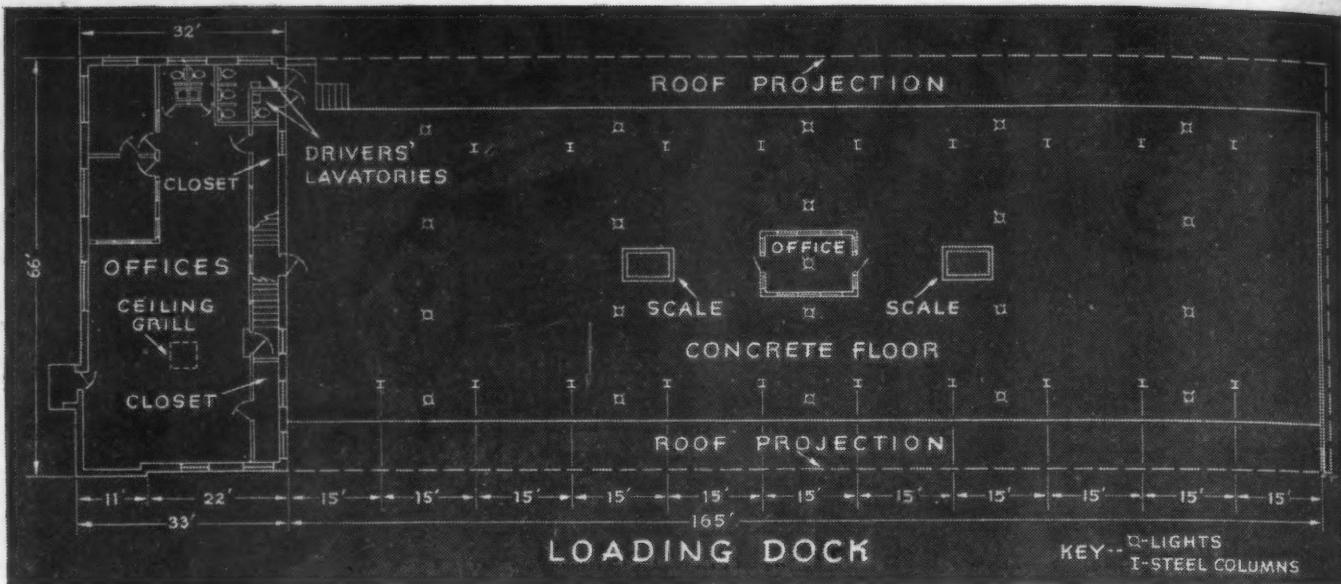
and for-hire trucks for the effective measures they've taken to keep their loads moving efficiently during wartime, despite manpower shortages and increased operating difficulties.

But the solution of the traffic problem in our towns and cities concerns everyone using the streets—owners and drivers of passenger cars as well as commercial vehicles.

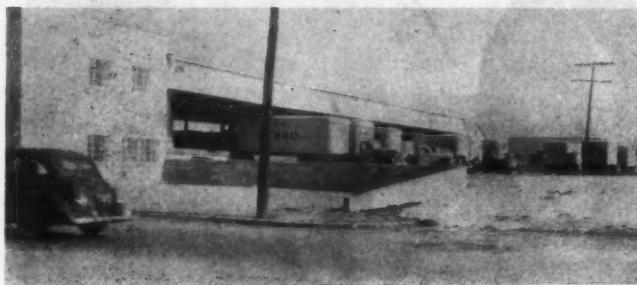
You are urged to co-operate by encouraging every intelligent plan for relieving transportation congestion in your community.

**Studebaker**  
PEACETIME BUILDER OF  
FINE CARS AND TRUCKS

Wartime builder of Cyclone engines for Boeing Flying Fortress—heavy-duty Studebaker military trucks—Weasel personnel and cargo carriers



Loading dock, adjoining main office, equipped with concrete floor, fluorescent lighting, lavatories; dispatch office in center



Wide doors in freight terminal make for easy access to loading dock. They are designed for postwar 34-ft. tandem vans

(Continued from Page 72)

The policy of the company now is to repair tractors on the road when necessary, rather than tow them in. Class A freight carriers need to keep the freight moving and to bring in a transport means to reload into another trailer and much delay.

On a road breakdown the service car from the nearest terminal, either Shreveport or New Orleans, goes to the spot prepared to put in a clutch, a spring, or do most any kind of a repair job that can be done in the shop.

The repair car is equipped with a ton or two of tools and in addition has lighting and extra fusees for night work. He immediately protects the job by setting out additional flares to the ones set by the driver, sets up his lights for illumination and goes to work.

RECORDS are kept of engine hours for purposes of arriving at the overhauling period. Sometimes it is dictated by the amount of oil being consumed and other factors. Overhaul consists of complete renewal of worn parts after engine has been taken from tractor and cleaned. Main bearings, connecting rod inserts, wrist pins, pistons are all examined for wear and are replaced when necessary.

No rebuilding of parts is done on a scale of any importance, although some may be done during the present shortage. The policy is replacement with standard replacement parts.

Both terminals have a paint shop where all repair jobs, such as rebuilt wrecks, are repainted.

Herrin recently obtained two 28-ft. tandem trailers using two axles and eight tires and expect to replace many of their 22 and 24 ft. trailers when possible, eventually going to the large size which they will be able to use because of elimination of railroad underpasses in their territory.

Greasing of equipment is not done on any mileage basis. All equipment is greased when it comes in from a trip. The driver is expected to leave a note on the switch of any mechanical needs.

Washing is done every Sunday because that is the day when all the equipment is at the terminals. Loads start out on Sunday night for Monday morning deliveries.

Both shops accommodate seven trucks and tractors at one time.

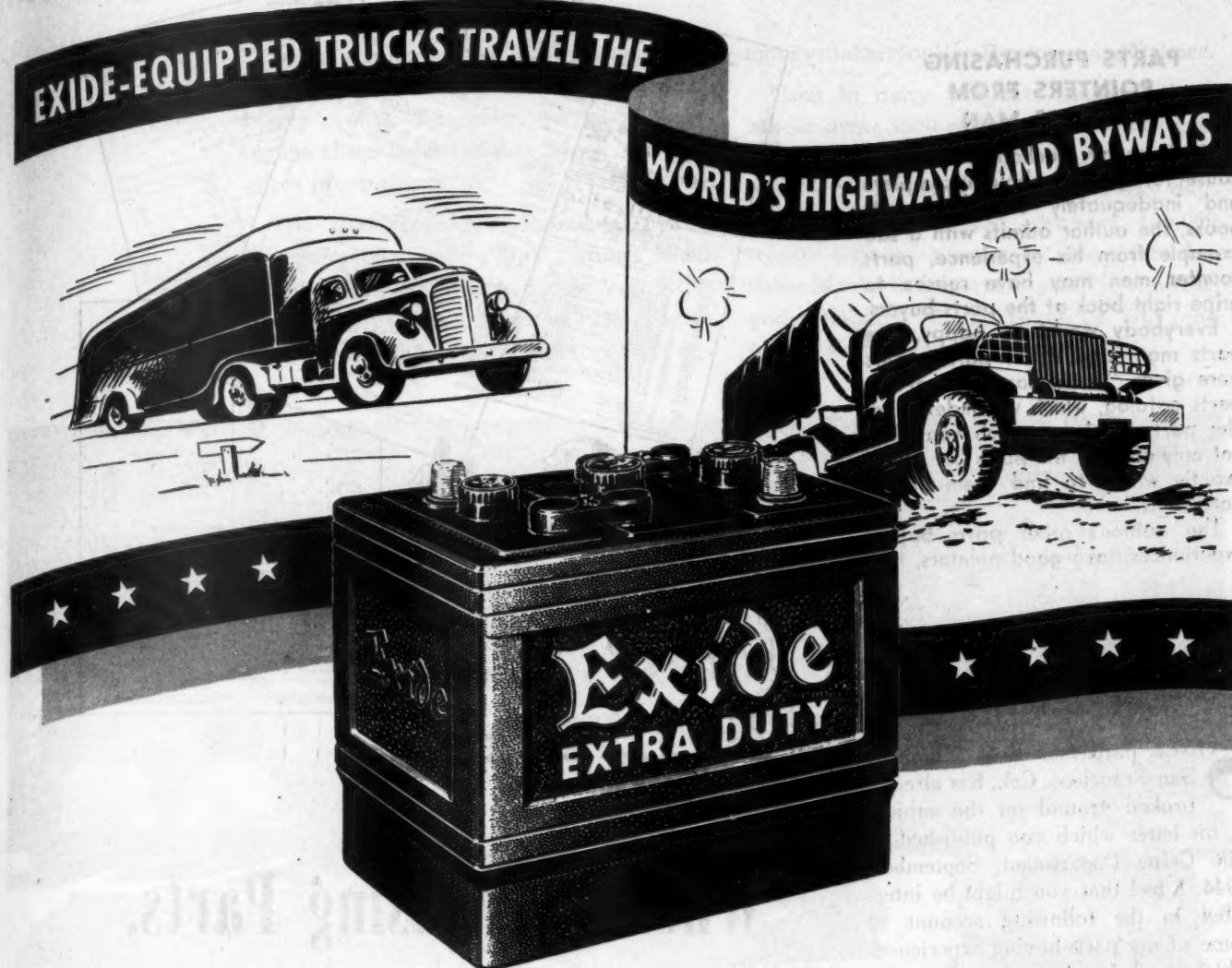
Recreation and dormitory facilities are provided for drivers at the Shreveport and New Orleans terminals. The New Orleans terminal sleeps 20 drivers on full three-quarter beds. Hot and cold water, shower baths, game and reading room, radio and other hotel conveniences are provided.

ANTICIPATING the ability to save money on gasoline by large purchases in the post-war period, 10,000-gal. underground tanks have been installed at both terminals, equipped for taking the load of a railroad tank car.

The New Orleans terminal is all new, built of steel and brick and concrete. The famous "quivering ground" of the delta around New Orleans has no bottom and the site required the driving of hundreds of wooden and steel piling as a support for the buildings and concrete aprons.

Herrin Motor Lines is a Class A common carrier, certified for both intra and interstate trucking. Present rolling stock consists of 55 tractors and 65 trailers. It does an annual mileage of three million miles and has freight terminals in Mobile, Pascagoula, Miss.; Gulfport, Miss.; Baton Rouge, La.; Alexandria, La.; Monroe, La.; Jackson and Natchez, Miss.; and Ferriday, La.

★ TRUCKS CARRY A WAR LOAD ★



ALONG city streets, on open highways, over Seabee-made roads—in nearly every country on the globe—millions of motor trucks are rolling along in a steady stream. Most of them carry a war load. Hundreds of thousands of them are equipped with Exide Batteries.

A large percentage of these war supplies is borne by the motor fleets here at home, where the major bulk of war freight gets its start. The records that America's motor fleets are making will be difficult to surpass. And they are

being made under severe handicaps—handicaps which are being surmounted largely because of the splendid work of the maintenance man.

Maintenance men and fleet owners alike have learned that they can count on their Exides for dependability, long-life and ease of maintenance.



THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

## **PARTS PURCHASING POINTERS FROM A PARTS MAN**

While many mechanics have just cause for griping about incomplete and inadequately compiled parts books, the author admits with a sad example from his experience, parts counter men may have reason to gripe right back at the parts buyers.

Everybody would be happy, one parts man suggests, if parts orders were given "in the language of the parts catalog, which we understand. The parts numbers, which you give, not only identify the parts but tell us exactly where to find them in our parts bins."

The author's other parts buying experiences have good pointers, too.

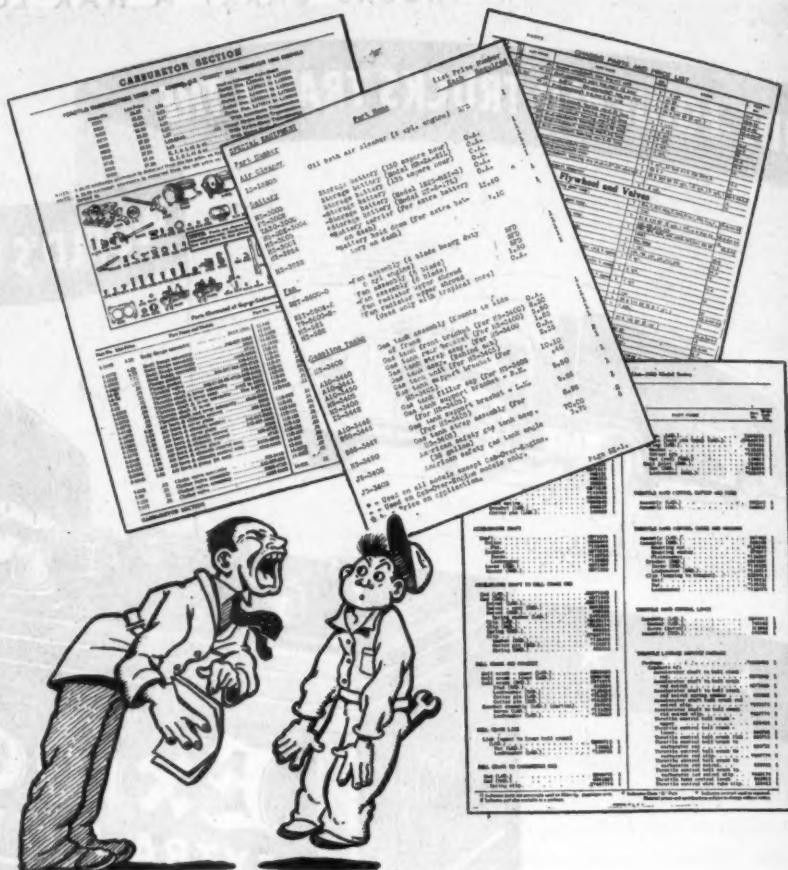
**S**INCE parts man Ross Willoh of San Francisco, Cal., has already broken ground on the subject in his letter which you published in The Gripe Department, September, 1944, I feel that you might be interested in the following account of some of my parts-buying experiences which speak for themselves.

which speak for themselves.

I recall an incident that happened several years ago when I went to a large truck manufacturer's branch in Boston to buy a supply of parts. The counter was unusually busy that day, and I had to wait a long time before my turn came to be waited on. When I handed the clerk the list of parts I wanted, I apologized for giving him such a large order to fill when he was so busy.

He looked at my parts list. It contained some 20 or 30 items. Each item bore the catalog part number, and the part names were exactly as in the catalog.

"My friend," said he, "if everybody bought parts as you do we could work at this counter all day with smiles on our faces. We are always glad to see you come in the door," he continued, "and glad to wait on you because we never have to ask a lot of questions to find out what you want. Your lists are written in the language of the parts catalog, which we understand. The parts numbers.



# When Purchasing Parts, Take Time to Save Time

## A reminder from a fleet superintendent that truck parts have names and numbers.

Use them to save time, avoid mistakes

by FLETCHER G. DUDLEY

Elect. & Building Superintendent, Hague-Sprague Corp., Lynn, Mass.

which you give, not only identify the parts but tell us exactly where to find them in our parts bins."

As he waited on me, he talked at some length of how only a very small

minority of parts buyers ever bother to order parts from the catalog, and what an additional burden this placed on the parts clerk. Take for example,

(TURN TO PAGE 138, PLEASE)

## Mack gives You the "Top of the Bottle"!...

Low maintenance costs and real operating economy are Mack truck facts that lead to bigger profits. Truckmen everywhere recognize these facts because Mack performances prove them.

The Van Rompaye—Palmer Trucking Company of Chester, N. Y., knows Mack quality from 'way back. Louis Van Rompaye bought his first Mack in 1918. Today, 27 hard-working Mack tractors are real

money makers for Van Rompaye and Palmer.

Used in dairy products hauling, these Macks draw 3500-gallon tanks mounted on trailers. The fleet brings 65,000 gallons of fresh milk into New York City every day. Each of these Macks averages 100,000 trouble-free miles per year. Day after day these Macks demonstrate quality, stamina, and reliability. *Every Mack on the road proves that "You can't beat a Mack!"*



★ BUY THAT EXTRA WAR BOND TODAY ★



Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.

**Mack**  
TRUCKS  
FOR EVERY PURPOSE  
ONE TON TO FORTY-FIVE TONS



**NEW Mack Trucks**  
are available for  
essential civilian use.  
Ask for details.

# LAUGH IT OFF



with SKAG SHANNON



Dispatcher: "A woman's greatest attraction is her hair."

Loader: "I say her eyes."

Checker: "I'd say her teeth."

Driver: "What's the use of lying about it?"

In adjoining beds of a maternity hospital, the babies of two truck operators were comparing notes: "I'm a girl—what are you?"

"I'm a boy."

"You look like a girl."

"Wait until the nurse goes and I'll prove it to you."

As the door closed, he shyly lifted the covers for her anxious eyes. "See, blue booties!"

The police examiner was putting out his class of rookies: "... looking neither to the right nor the left, he pressed forward. Neither foe nor friend could swerve him from his purpose. Any violator of his code was immediately run down and incarcerated. What would you young officers call such a man?"

"A truck driver," said the ex-bill clerk, "but why the surgical operation?"

STENOGRAPHER TO TRAFFIC SOLICITOR: "WELL, I RECKON THE WAR IS NEARLY OVER. FOR THE TENTH TIME I WAS A HALF HOUR LATE THIS MORNING, AND THE BOSS FIRED ME!"

Madge, formerly on the bill desk, was being shipped out after joining the WAVES. The land was still in sight astern. Her girl friend was

watching Madge's g-r-e-e-n complexion.

"You're not sick, are you?" the cut-up wanted to know.

"N-O-o-o," Madge mumbled; "but I'll be damned if I'll yawn!"

**Girls are like newspapers, says Shorty the mechanic: They have forms; they always have the last word; back numbers are not in demand; they have great influence; you can't believe everything they say; they're thinner than they used to be; they get along by advertising; every man should have his own, and leave his neighbor's alone.**

A truck made a night stop at a

hamburger joint. The helper, on his first trip, was giving the outfit the once-over. He opened the rear door and flashed his light inside. A cute blonde reared up from a pile of blanket wrappings, yawned and grinned.

The kid stammered: "What am I going to do with you?"

"Look, Jack Benny," the cutie lisped: "get your driver, he'll know."

**DISPATCHER (GIVING TRUCK DRIVER HELL FOR NOT CALLING IN AS TOLD): "AND WIPE THAT OPINION OFF YOUR FACE!"**

*A filing system is a hiding place for correspondence.*





Dave Fyfe, of Dave Fyfe Auto Body Works. Customers can reach him by telephone at M66-141.



There are 105 "Ls Jims" throughout the country.  
Do you know your local Ls dealer?

"Jim," a neighbor of yours, was chosen an Ls body builder because of his ability to handle your requirements intelligently—whether you need one or a thousand truck bodies.

Your "Jim" knows local conditions and regulations thoroughly and can design a body to meet your individual requirements. Unhampered by shipping problems, he makes speedy deliveries—does a quick factory repair job.

## Tampa, Florida, has its "Ls Jim"\*\*— Dave Fyfe, craftsman, of Dave Fyfe Auto Body Works

Dave Fyfe, body builder whose work labels him a superior craftsman, serves Tampa, Florida, and the surrounding areas as their "Ls Jim." Attentive to his customers' needs, he offers both long experience and unusual skill in body designing and building.

A typical "Ls Jim" in his ability to produce all-steel bodies to meet individual requirements, Dave Fyfe also provides all the advantages of Ls mass production. Quick assembly of Lindsay Structure from stock parts spells speedy delivery and fast, low-cost repairs. Owners and operators of national fleets can have identical Ls bodies built—or, in emergency, repaired—by any of the 105 Ls body builders located throughout the country.

Check the many other advantages of Lindsay Structure with your "Ls Jim"—write today for his name. Lindsay and Lindsay, Adams-Franklin Bldg., Chicago 6, Ill.; 60 East 42nd St., New York 17, N. Y.; or Lindsay Structure (Canada) Ltd., Dominion Square Bldg., Montreal.

# LINDSAY STRUCTURE



U. S. Patents 2017629, 2263510, 2263511  
U. S. and Foreign Patents and Patents Pending

DISTRIBUTORS AND BODY BUILDERS THROUGHOUT THE COUNTRY

# CCJ QUIZ

by ROBERT F. BAHL

Correct Answers on Page 105



Since your truck would be pretty much up in the air without a road underneath it, we're devoting this CCJ QUIZ to questions about highways. Count 10 points for each correct answer, and see how far you can go on the road to 100.

**1.**

The truck driver just made a statement that there was more state highway mileage in his state than in any other state in the Union. Can you pick out his favorite song?

- a. "Deep in the Heart of Texas"
- b. "The Sidewalks of New York"
- c. "California, Here I Come"
- d. "Carolina Moon Keep Shining"



**2.**

A two-mile stretch of road built on New Guinea by our armed forces can claim to be one of the costliest ever constructed because . . .

- a. It was paved with gold ore
- b. 20,000 American soldiers were killed in the building of it
- c. It was built entirely over quicksand
- d. Construction was done only on moonless nights

**3.**

The year was 1925, and this person, now a bit more famous than then, was touring the country for the Good Roads Assn. The name, please?

- a. Eleanor Roosevelt
- b. Ernie Pyle
- c. Dwight Eisenhower
- d. Harry S. Truman

**4.**  
Under which of these circumstances would you be most likely to think of the merits of a new chemical called "Stabinol"?

- a. Going up a steep grade
- b. When stuck on a muddy country road
- c. Just after you have run out of gas
- d. When getting a ticket for speeding

**5.**

You probably know that the federal road program is now administered by the Public Roads Administration of the Federal Works Agency, but do you remember that previous to 1939 all federal roads came under the . . .

- a. Treasury Department
- b. Department of the Interior
- c. Department of Agriculture
- d. Department of Commerce



**6.**

Congress has passed a bill to spend \$500,000,000 per year for three years on post-war highways. This amounts to subsidizing highway users . . .

- a. To the tune of \$500,000,000 a year
- b. Just half that much, \$250,000,000
- c. It's no subsidy at all

**7.**

Find the culprit. Which of these

factors is the greatest single cause of road deterioration?

- a. The weight of vehicles
- b. The speed of vehicles
- c. The number of vehicles
- d. Weather conditions

**8.**

Simple as ABC . . . or is it? Would you be able to tell us with what country the ABC Highway is associated?

- a. Alaska
- b. Belgium
- c. Burma
- d. China



**9.**

Chances of getting a flat tire on Michigan highways are less because . . .

- a. A large roller magnet removes nails from the road
- b. All trucks entering the state must undergo a tire inspection at the state line
- c. Gas station attendants in Michigan check all tires on a vehicle every time gasoline is purchased
- d. Most Michigan highways are surfaced with rubberized concrete

**10.**

Many an American truck has rolled over Hitler's superhighways . . . his famed "autobahnen" . . . in the past few months. Literally translated, "autobahnen" means . . .

- a. Autos forbidden
- b. War road
- c. Truck highway
- d. Auto tracks

# Here's a Picture of 32 Trucks!



... A picture of 32 trucks? Unbelievable? No . . .  
not when you get the whole story. And here it is:

These two truck-tractors, operated by U. S. Truck Company, keep 16 Fruehauf Trailers moving between two plants eighteen miles apart on the outskirts of the busy Detroit area.

The Trailers each carry 32,000 pounds—at least twice as much as the truck that *pulls* the load was designed to *carry*.

It's a round-the-clock operation—with drivers working two shifts—the "shuttle" system going on 24 hours a day.

Trucks and drivers are constantly busy . . . never standing idle for loading or unloading. They pull into one plant with a Trailer-load of parts for machining . . . "drop" the Trailer . . . couple up to another loaded with finished parts . . . and return to the other plant where the same operation is repeated.

Thus, 16 Fruehauf Trailers enable 2 trucks to do a job that would otherwise require 32 trucks! The savings in gasoline, tires, manpower, time and money are obvious.

Coupling and uncoupling take only a jiffy, since these Trailers are all equipped with Fruehauf Automatic Supports. All the driver need do is connect or disconnect the brake hoses—he doesn't spend time or energy winding Supports up and down . . . it's done automatically.

This U. S. Truck operation is, of course, an outstanding example of the advantages of the "shuttle" system. The ratio of 1 truck to 8 Trailers is higher than usual. Average is about 1 to 3. But, whether it's one truck to eight Trailers, or one to two or three—the "shuttle" operation with Truck-Trailers means maximum efficiency—and savings not possible with any other method.

## U. S. Truck Co. Celebrates Silver Jubilee



ROBERT F. JONES  
President and General  
Manager  
U. S. Truck Co., Inc.

Twenty-five years ago the U. S. Truck Co. Inc., started operation with one truck. Now one of the largest freight lines in Michigan, U. S. Truck owns and operates 500 tractors and Trailers—280 Fruehaufs—engaged almost exclusively in handling war material shipments throughout Michigan and part of Ohio.

Robert F. Jones, president and general manager, says that complete utilization of the "shuttle" system has made possible the hauling of 35,000 tons of war material monthly, despite the fact that their staff has been reduced nearly 50%.

\* \* \*

World's Largest Builders of Truck-Trailers  
**FRUEHAUF TRAILER COMPANY . . . DETROIT 32**  
Service in Principal Cities

"ENGINEERED  
TRANSPORTATION"  
REG. U. S. PAT. OFF.

# FRUEHAUF TRAILERS



Fig. 1. The 40-ton tank transporter, "Dragon Wagon," designed for hauling heavy equipment. Maximum speed, 28 m.p.h.; net hp., 230 at 2100 r.p.m. Tire size, 14.00x24

## Do Army's SPECIAL Vehicles

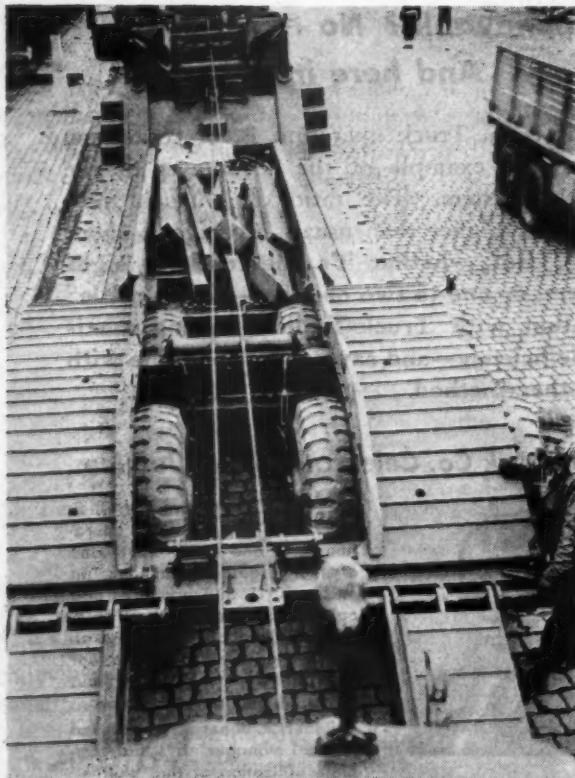


Fig. 2, above. Hinged ramps at rear are lowered to ground for loading. Winch from truck aids loading

WAR invariably brings out new developments in practically every field of modern industry. World War II is no exception and the technical genius of American industry has amazed the world.

New developments in the transport field have not been as widely heralded as those in munitions, aircraft and other more glamorous phases of the war effort, but they have been numerous and important in keeping Allied armies rolling in all types of terrain throughout the world.

Special-purpose vehicles have been designed by Army-industry engineers whenever a specific need for a new type vehicle arose. Thousands of these special-purpose vehicles will some day be declared surplus, along with larger quantities of general-purpose vehicles. The ingenuity of the American transport industry will be taxed to the limit to find a use for them, but it is not likely that any new wartime development that can be adapted to peacetime operation will be cast by the wayside.

Postwar production for civilian use of these vehicles will be limited by the quantity of available surplus and also by the fact that the manufacturers do not hold patents

Fig. 3, below. Eight-wheeled semi-trailer of 80,000-lb. capacity. Huge low pressure tires increase mobility



Descriptions of some of the unusual vehicles inspired by military needs will help fleet operators determine if they have postwar civilian possibilities should they be declared surplus

by GENE HARDY

Commercial Car Journal, Washington Bureau

# Have Civilian Uses?

on some, since they were primarily Army developments.

## "Dragon" Wagon—a Massive Combination

ONE of the most interesting of these special purpose vehicles is Army Ordnance's 40-ton tank transporter, commonly called the "Dragon Wagon." This massive truck and trailer combination, costing about \$20,000, was originally designed for use in recovering and evacuating material over all types of terrain, but it has been used for hauling all types of heavy equipment, ammunition and both combat and transport vehicles. The tractor truck, shown in Fig. 1, is a 6x6 model, designed to supply the power and equipment needed for a variety of hauling, recovery and wrecking operations.

The engine is a Hall Scott, 440, in-line, 6-cylinder, water-cooled job. The transmission has four speeds forward, and one reverse. In connection with an auxiliary transmission, 12 forward speeds and three reverse speeds are available. Its maximum speed on level ground is 28 m.p.h. and on a 3 per cent grade is 12 m.p.h. The ford-

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Fig. 4. Front loading semi-trailer. Pin-connected arms, hydraulic cylinders, latching devices make it collapsible

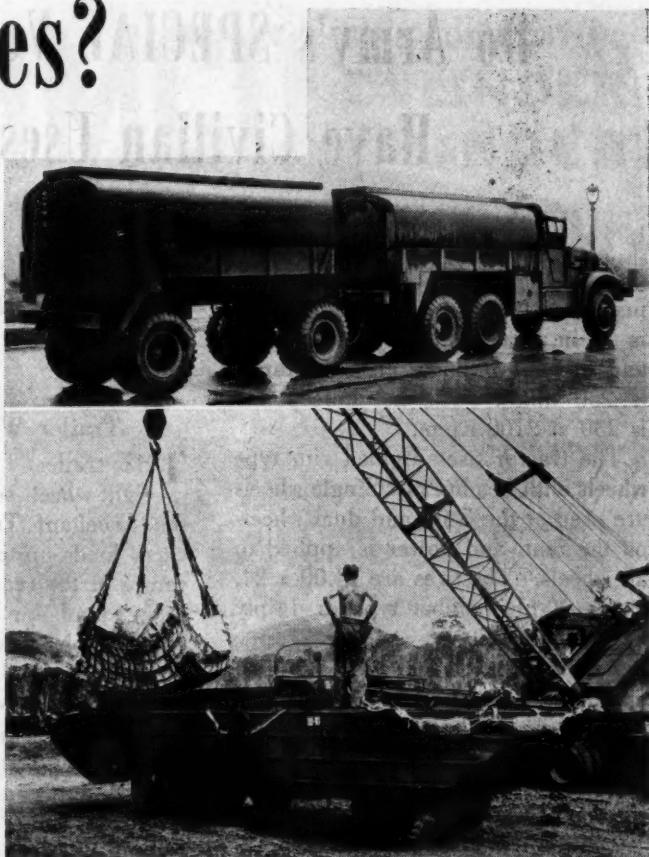


Fig. 5, top. The 5000-gal. tank unit. Truck is a 6-wheeled, 6-ton job. Trailer is of 7½-ton capacity with 6 wheels

Fig. 6, above. The 2½-ton amphibious "duck," 6x6; land speed, 45 m.p.h. Propeller drives it 6 m.p.h. in water

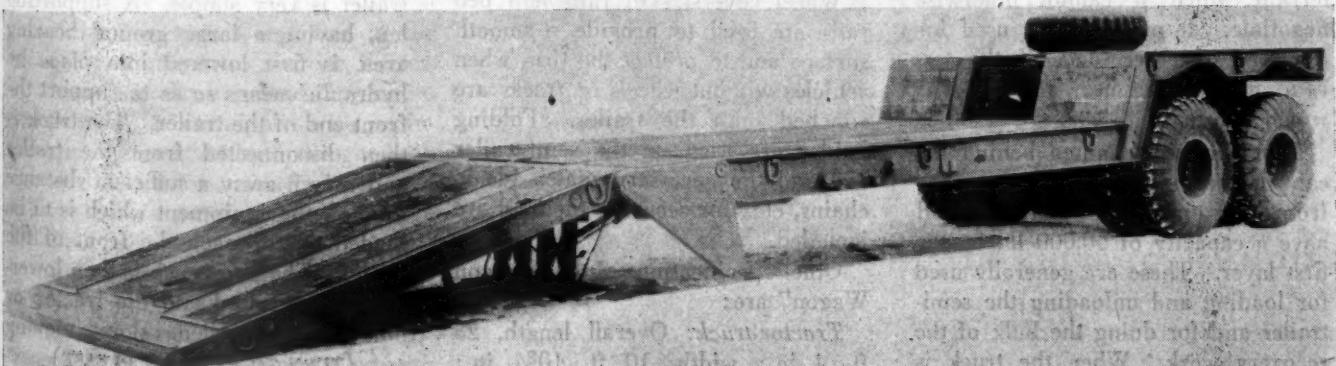




Fig. 7. The "weasel," a light track vehicle for deep mud or rugged terrain. Top speed, 36 m.p.h.

## Do Army's SPECIAL Vehicles Have Civilian Uses?

(Continued from Page 83)

ing depth at the lowest forward speed is 56 in. Fuel capacity is 120 gal., and the approximate cruising range is 250 miles. The net horsepower is 230 at 2100 r.p.m.

The tractor uses divided rim type wheels with beadlocks. Single wheels are used at the front and dual wheels on the rear, and power is applied to all wheels. The tires are 14.00 x 24, either 20-ply combat type or 14-ply desert type.

A heavy-duty universal type semi-automatic fifth wheel is provided for towing the trailer. The tractor is provided with air brakes on the four rear wheels, and there is an air-brake valve connection for the trailer.

A front-mounted winch, controlled from the cab, has a capacity of 35,000 lb. on the first layer. Its primary purpose is the recovery of the truck and the trailer itself, when stuck in terrain which it cannot otherwise negotiate. It may also be used for recovery of other loads if the terrain makes the use of the rear winches unfeasible.

Two winches mounted behind the cab shown in Fig. 2 are controlled from the operations platform and have a capacity of 60,000 lb. on the first layer. These are generally used for loading and unloading the semi-trailer and for doing the bulk of the recovery work. When the truck is

separated from the trailer, it can perform most of the functions of a heavy wrecker.

### Trailer Wheels Movable

THE trailer, Figs. 2 and 3, is an eight-wheel semi-trailer, built by the Fruehauf Trailer Co., and will carry loads up to 80,000 lb. Hinged ramps at the rear may be lowered to the ground for use in loading, the winch cables from the tractor being threaded through rollers at the front of the trailer and to the disabled vehicle. The trailer wheels may be moved closer together or farther apart to accommodate vehicles of different widths, including foreign equipment. The trailer may be loaded and made ready for travel without the tractor, since its front end may be made to rest on skis supported by collapsible legs.

Wheel covers, skid rails and bed rails are used to provide a smooth surface and to protect the tires when vehicles without wheels or tracks are winched onto the trailer. Folding guides are used on the semi-trailer bed and the necessary snatch block, chains, etc., for securing the load are included.

Other specifications of the "Dragon Wagon" are:

**Tractor-truck:** Overall length, 25 ft. 4 in.; width, 10 ft. 10 $\frac{3}{4}$  in.;

height, top 10 ft. 4 in., cab 9 ft. 6 in.; ground clearance, 14 in.; wheelbase, 172 in.

**Trailer:** Overall length, 38 ft. 9 in.; normal operating width, 12 ft. 6 $\frac{1}{2}$  in.; emergency operating width, 10 ft. 4 in.; overall height, 9 ft. 6 in.; bed height, 3 ft. 6 in.; ground clearance, 14 in.; wheelbase, 372 in. center of bogie to king pin.

More than 1000 of these have been produced and are now in operation. Despite its versatility and proven practicality in rough terrain and mountainous regions, the size of the vehicle would conflict with many existing state laws and would limit any possible postwar use almost exclusively to individual states.

### Radical Front-Loading Semi

**A** HIGHLY mobile, radically designed front-loading semi-trailer, Fig. 4, capable of transporting heavy construction machinery over rough terrain or even soft ground at high speed, has been developed by the Engineer Board at Fort Belvoir, Va. Huge tires of the low pressure type, similar to those used on large earth moving equipment, make this mobility possible and their use, in turn, is made possible by the front loading arrangement.

To maintain a low load carrying platform and still use the large rear wheels, the Engineers developed the front loading ramp. The front portion of the trailer, known as the "gooseneck," was hinged so that it could be collapsed to form a loading ramp. Through a combination of pin-connected arms, hydraulic cylinders and latching devices, the gooseneck was transformed from a rigidly constructed portion of the trailer to a unit which could be easily collapsed to form the ramp. Rigidity could be restored when necessary to tow it with a truck.

Loading operation of this unique trailer is very simple. A supporting leg, having a large ground bearing area, is first lowered into place by hydraulic means so as to support the front end of the trailer. The truck is then disconnected from the trailer and driven away a sufficient distance to allow the equipment which is to be loaded to approach the front of the trailer. The gooseneck is then lowered to the ground and the tractor or other self-propelled slow moving

(TURN TO PAGE 87, PLEASE)

## ARMY SPECIAL VEHICLES

(CONTINUED FROM PAGE 84)

equipment is driven up the ramp formed by the gooseneck and to the pay-load deck.

The next operation is to return the gooseneck to its original position by means of a powerful hydraulic cylinder built into the trailer. This cylinder operates on the same principle as hydraulic jacks used for changing tires. The truck is then backed up to the semi-trailer, coupled up, and the supporting leg returned to its original position. A complete loading or unloading operation may be handled in a very short time by one man, whereas conventional trailers usually required much physical effort on the part of several men to handle and place the heavy cumbersome loading ramps.

### Tank Trailer Combination

THE Quartermaster Corps has adopted a new truck-trailer unit, Fig. 5, to be used in the transportation of gasoline and other petroleum products. Production of the new 5000 gal. units, whose capacity will more than double that of the 2000 gal. semi-trailers which they are to replace, is in process.

The truck portion of the new unit is a 6-ton, six-wheel job, while the trailer section is of 7½-ton capacity and also has six wheels. Truck and trailer each will carry a maximum of 2500 gal. of gasoline.

### "Ducks" Cost \$6,500 Each

THE 2½-ton "Duck," standardized in October, 1942, is another vehicle which has seen widespread and varying service during the war. It has proved its usefulness in hauling operations against enemy beaches and is at home in water as well as on land. The vehicle was developed for military service by the National Defense Research Committee at the request of the Army Service Forces.

Based on the standard 2½-ton, 6 x 6 truck, it is equipped with an integral watertight hull designed in such a manner that truck chassis and drive units are attached to and in the body of the hull.

For land operation, Fig. 6, the "Duck" utilizes its six driving wheels and conventional steering gear assembly. In water, it is propelled with

a water propeller and is steered by the combined use of the front wheels and a rudder which is connected to and operated by the steering gear column. Its maximum speed on land is 45 m.p.h. and in water 6 m.p.h.

Springs and driving axles are attached to the bottom of the hull and suspend in water when the vehicle is used as a boat.

A two-speed transfer case permits drive of both front and rear axles, or only the rear axle as required. The water propeller transfer case,

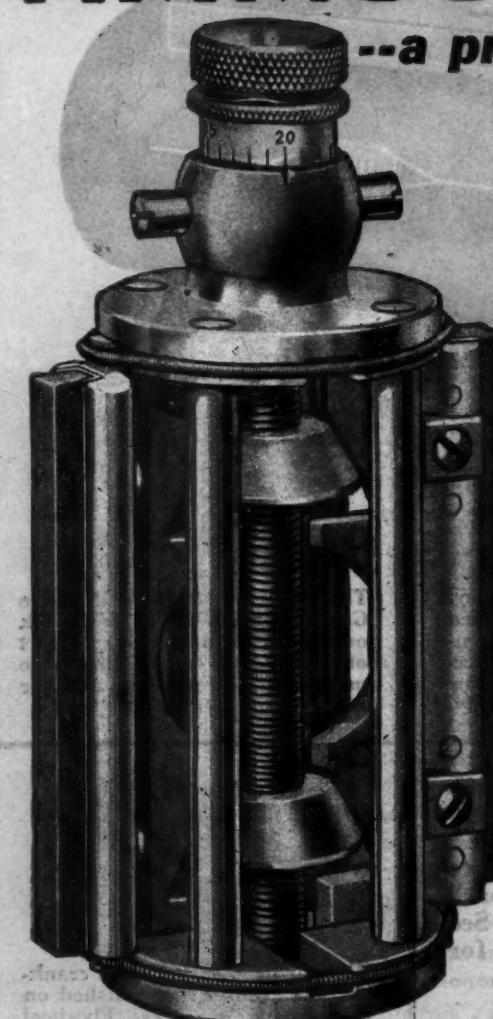
mounted in drive line between the transmission and transfer case, permits engagements or disengagements of the water propeller.

A 10,000 lb. capacity winch is mounted at the rear, and cable guides are provided to permit operation at either the front or rear. A 60 gal. per minute rotary pump and a 260 gal. per min. centrifugal pump are used to pump water out of the hull. A 50 gal. per min. hand pump is furnished for emergency use.

(TURN TO NEXT PAGE, PLEASE)

# AMMCO

## SELF-LUBRICATING CYLINDER GRINDER --a precision hone



• **SAVES TIME . . . CUTS COSTS . . .** No vacuum cleaner needed . . . No flying dust . . . Completes the job, including clean-up, in half the conventional time.

• **EASY to ADJUST . . . EASY to OPERATE . . . ACCURATE . . .** One set of standard stones and one set of burnishing stones provides maximum cutting speed, and produces a mirror finish.

Model SL400—range 2 3/16" to 4" . . . Model SL500—range 2 11/16" to 4 1/2". Extension carriers available to increase range to 5 1/2".

See Ammco Jobber for details.

2100 COMMONWEALTH AVE.  
NORTH CHICAGO, ILLINOIS

## ARMY SPECIAL VEHICLES

(CONTINUED FROM PAGE 87)

### Two Types of "Weasels"

THE "Weasel," small personnel and cargo carrier, is one of the most versatile vehicles supplied to the armed forces.

It is a light, airborne, highly mobile carrier for operation on all types of ground. There are two types, one for operation on land, Fig. 7, and an amphibious type, right. Both have a

crew of two and a payload of 1200 lb. and are equipped with Studebaker 6-cylinder engines, the same type used in the Studebaker Champion.

The maximum speed of both types on land is 36 m.p.h., and the top speed of the amphibious vehicle in water is 4 m.p.h. The land type has three speeds forward and one reverse and a transfer unit gives it six speeds forward and two reverse.

The space at the rear accommodates three passengers or cargo. The ribbed construction of the full-length

semi-flexible tracks provides adequate traction for hills and soft porous



ground. The "Weasel" can negotiate 45 deg. hills and can be turned in a 12-ft. radius.

### Cruiser for Snow Country

ORDNANCE has also recently developed a new full track Snow Cruiser to be used in deep snow country for towing and light cargo hauling. This transport vehicle, below, when loaded has a speed of 19 m.p.h. and is capable of transporting 4000 lb. of personnel or supplies in deep snow and up steep grades. It has a cruising range of 100 mi. and a unit ground pressure of only 0.84 lb. per sq. in. Maximum tractive effort is 5000 lb.

It is equipped with a Dodge military model T-214 truck engine with 12-volt ignition and standard accessories and is also given complete Army winterization.



## By comparison - You'll buy PAR



PAR by Lynch



For increased cooling efficiency, the Par balanced, Fan-spoked Flywheel circulates air over entire compressor, inter- and after-coolers . . . has tapered hole for easy disassembly and reassembly.



The Pressure Switch, Pressure Gauge, Globe Valve, and tank outlet, all form an integral part of the bronze casting discharge manifold. A streamlined unit for efficient operation.



The Par drop-forged steel crank-shaft is ground and polished on all bearing surfaces. Flywheel end is taper ground to fit tapered hole in Flywheel—easily disassembled and reassembled.

**PAR**  
**Lynch**  
DIVISION

MANUFACTURING CORPORATION  
DEFIANCE, OHIO, U. S. A.

GIVES HORSEPOWER MORE ZIP!



# CASITE

CLEANS OUT MOTORS  
KEEPS MOTORS CLEAN

★ Casite speeds oil to close tolerance areas, frees sticking valves and rings, cleans out power-destroying sludge and gum. Cut maintenance costs by giving every motor a Casite clean-out NOW—and regularly!

In the crankcase every oil change.

Through the air intake every three months.

(A pint for all passenger cars and small trucks  
—10% of crankcase capacity for all others.)

#### WHAT CASITE DOES

- It quickly cleans out harmful sludge deposits.
- Retards the formation of engine varnish.
- Frees sticking valves and rings.
- Makes starting easier.
- Helps oil flow smoothly and constantly to close-tolerance areas.
- Gives better and smoother performance.

THE CASITE CORP. • HASTINGS, MICHIGAN



# Making Ball Bearings Means "Miking" to Millionths

Grade 1 bearings,  $\frac{1}{8}$  to 3-in. diameter, must meet .000050 in. tolerance, even the "hardware" grades are held to  $\pm .002$  in.

FIFTY-MILLIONTHS of an inch (0.000050 in.) is mighty close measuring. Yet that's the total toler-

ance on a precision grade steel ball used in aircraft quality ball bearings. What with fine tolerances on round-

ness and diameter and highly polished surface, the making of bearing balls is claimed to be about the finest known in any manufacturing field—and that includes instrument making.

How do they make steel balls and how do they get such perfection? Most of us would like to know, if only to satisfy our curiosity. After all, the mechanically minded man is interested in how anything that goes into a motor vehicle is made. The process is not secret. It's just that it has not been publicized. Your reporter had an opportunity to see how one well known specialist makes steel balls for precision bearings and is glad to pass this information on to you.

This plant makes all grades and sizes of balls, and makes them out of many different materials. For example, the standard ball bearing uses chrome steel balls. Others take brass or bronze, monel metal, or stainless steel. The smallest size is  $\frac{1}{8}$  in. in diameter; the largest goes over 3 in.

It is believed that the ball bearing represents about the finest precision work. For instance, the grade 1 precision ball is selected to a maximum size variation in roundness of plus or minus 0.000025 in. (one-twenty-five-millionth part of an inch). Even the hardware grade, the lowest grade there is, runs plus or minus 0.002 in. in sizes up to  $2\frac{1}{8}$  in. in diameter.

NOW let's see how this specialist makes them. Surprising as it may seem, they all start in the form of standard rods of given length and diameter. The first operation is to heat the end of the bar to forging temperature. Then it is pushed into a "header" or upsetting press. At the first station, a piece of the right length for a single ball is sheared off and pushed to the second station. At this point, the metal is squeezed in a die which forms it into a rough ball. When it comes out of the die, it looks very much like the small black rubber balls that candy stores peddle to school kids, even to a fin around the middle. Technically, when we talk about the steel ball this fin is a "flash."

At this point the ball is full of locked up stresses due to shearing and squeezing. These have to be removed by heating in furnaces to the right temperature and for the right

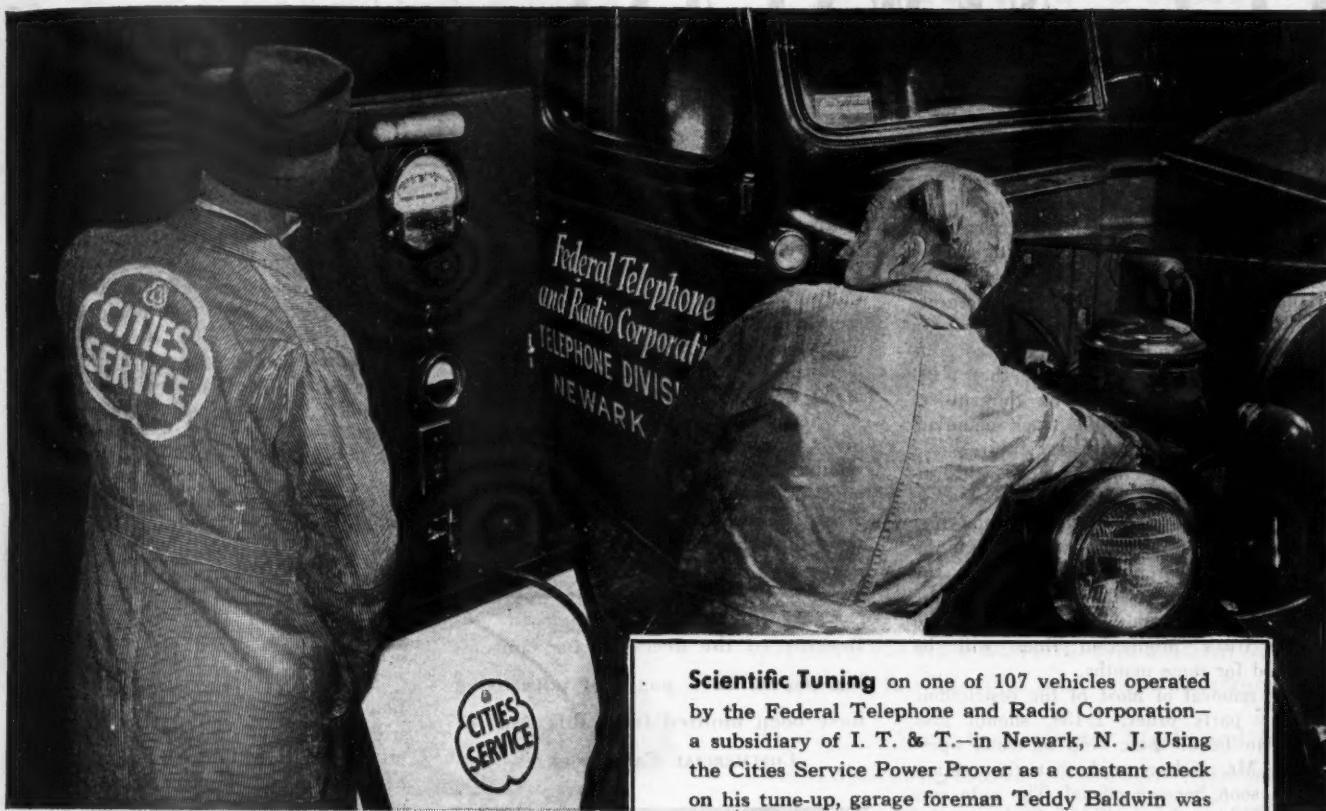
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## The Servis Recorder

Shows Busy and Idle Time... All Day

# POWER PROVER helps save 520 GALLONS OF GASOLENE in ONE Tune-Up



"I always prove the efficiency of my fleet" —says Mr. Bell, superintendent for the Federal Telephone and Radio Corporation in Newark, N. J., a subsidiary of I. T. & T. "When I first came to work here, I tried out the Cities Service Power Prover on the whole fleet of 107 cars. Believe it or not, by the end of the month it helped us save *more than 500 gallons of gasoline...reduced oil dilution...gave us better engine performance with fewer breakdowns. Now we use it regularly for quick, accurate tune-up.*

This offer is limited to principal cities in Cities Service marketing areas East of the Rockies.

**Scientific Tuning** on one of 107 vehicles operated by the Federal Telephone and Radio Corporation—a subsidiary of I. T. & T.—in Newark, N. J. Using the Cities Service Power Prover as a constant check on his tune-up, garage foreman Teddy Baldwin was able to determine quickly and accurately the cause of combustion inefficiency...make proper adjustments...reduce gasoline waste from 28% to 11%—a saving of 17% on one vehicle alone.

## TUNE UP YOUR OWN FLEET with the Cities Service Power Prover

**It eliminates guesswork in your tune-up...saves time and labor...reduces oil dilution...helps you get more working hours from your vehicles, with fewer breakdowns...and you'll actually save one or more gallons out of every ten.**

**Take advantage of a FREE DEMONSTRATION TEST ON YOUR FLEET.  
MAIL THIS COUPON TODAY.**

Cities Service Oil Company  
70 Pine Street, Room 342, New York 5, N. Y.

Gentlemen: I am interested in your offer of a FREE Demonstration Test of the Cities Service Power Prover on my fleet...without obligation to me.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

No. of Vehicles in Fleet \_\_\_\_\_

# CCJ NEWSCAST

## Trucks Will Get Priority in Reconversions

Reconversion plans for the truck manufacturing industry are shaping up slowly. Nothing definite has been decided as yet. However, Henry P. Nelson, Coordinator of Reconversion for WPB, told COMMERCIAL CAR JOURNAL that, "truck manufacturers will be given preferential treatment in regard to materials allotments as soon as possible." Mr. Nelson also said that WPB would have more to say on the subject after a meeting with the truck manufacturers to be held in the near future.

WPB is willing to go ahead with increased civilian truck production as soon as it is feasible, but recognizes the fact that military production will have to be maintained. Therefore, any relief in the immediate future will be mainly in the light and medium categories, for the heavy truck production lines will be jammed for some months.

The removal of most of the restrictions in the parts order, L-158, should also prove to be of some help to truck operators. Mr. Nelson said that this action would soon become official. The only sections of the order to be retained are concerned with giving preferential treatment in regard to certain types of functional parts.

Finally, WPB is just about definitely committed to getting more essential civilian trucks on the road before automobile manufacturers are given the green light.

## Ceilings Placed on 56 Repair Jobs

Specific limits have been set on the hours of labor automobile repair establishments may charge for in computing prices for 56 common passenger car repair jobs, the OPA has announced.

This action, effective June 14, 1945, is taken to check a practice in some repair shops of charging customers for more hours of labor than were actually required to do the particular repair job.

Distribution of copies of a special OPA supplementary regulation giving ceiling charges will be made through local War Price and Rationing Boards. Each shop must have a copy on hand for inspection by customers upon request.

Auto dealers will be able to get copies of the regulation from repair shops or from OPA War Price and Rationing Boards as well as from other OPA offices.

## Urge Tire Conservation

There will be no reduction in the overall production of tires, said John L. Collyer, special director of rubber programs recently, and should be no relaxation in the conservation of tires now on the road. In a letter to the governors of 48 states, Mr. Collyer urged all civilians to "rededicate" themselves to the victory speed limit of 35 miles per hour during the hot summer months. Tire wear is 50 per cent more at 50 miles per hour than at 35.

Whenever there is a reduction in military requirements in certain tire-size groups, he stated, steps will be taken at once to convert this capacity to production of civilian truck, bus and farm-implement tires of similar size.

Because of the necessity for conserving paper, 22% pages of advertising have been omitted from this issue of

COMMERCIAL CAR JOURNAL

## Correction for North Carolina Size and Weight Limit

In the "Size and Weight Limit" table of the April issue of Commercial Car

Journal, there was an omission in the data on North Carolina.

The maximum load restrictions for four-wheel truck with four-wheel or six-wheel trailer are limited by a formula as follows: "In determining the gross allowable weight, no group of two or more consecutive axles may have a concentrated gross weight greater than that produced by the formula, 700 (L + 40), in which formula 'L' represents the space measured in feet between the axles involved. Axles to be considered separate must be 48 in. or more apart."

## Farmers to Get Trucks and Machinery as Surplus Arises

Procedures for channeling critically needed trucks, machinery and equipment as it becomes available into agricultural uses has been set up by the Surplus Property Board.

The Surplus Property Board in cooperation with the War Food Administration will arrange for the sale of surplus property in rural localities and in such a manner as to assure farmers and farmers' cooperatives equal opportunity to buy.

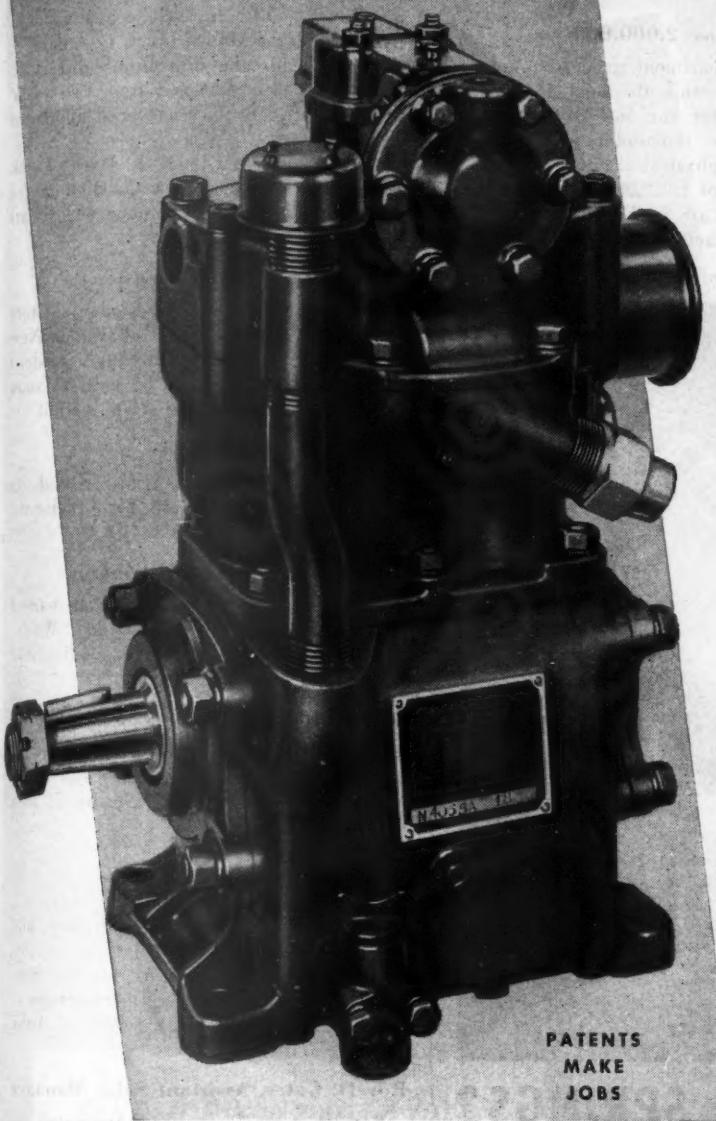
In the case of trucks, farmers must have certificates issued by the Agricultural Adjustment Agency. Sales will be made through the field office of the Commerce Department's Office of Surplus Property.

(TURN TO PAGE 94, PLEASE)



The "six point plan" adopted by Mistletoe Express Service of Oklahoma is simple but highly effective as shown from the records of tire mileage. Rigid adherence to these rules has accomplished two purposes. First, it has been a big factor in enabling them to keep operating costs down, and second, it has kept equipment rolling in the face of drastically cut tire quotas. Points were: 1. Keep tire pressures adjusted to load. 2. Keep brakes properly adjusted. 3. Keep wheels properly aligned. 4. Keep properly matched tires on duals. 5. Rotate tires at regular intervals. 6. Remove foreign particles from tires and seal cuts regularly.

# MORE POWER -



PATENTS  
MAKE  
JOBS

## Back of the Brake Pedal with the **MIDLAND** **10 Cu. Ft.** **COMPRESSOR**

Here's a brand new, husky Midland Air Compressor that offers great advancements in design, performance and dependability.

This 10 cu. ft. compressor is more compact and lighter in weight than large 3-cylinder compressors, yet more powerful and efficient due to Midland's feather type inlet valve construction.

The water-jacketed cylinder block and head keeps operating temperature down—eliminates oil pumping—retards formation of carbon.

Mountings available for any type of truck or bus.

For complete information about the many advantages offered by Midland's 10 cu. ft. Compressor ask your Midland Distributor, or write to us.

**THE MIDLAND STEEL PRODUCTS CO.**

10605 MADISON AVENUE, CLEVELAND 1, OHIO

Export Dept.: 38 Pearl Street • New York City



### WILL FINANCE AND MANUFACTURE PRODUCTS FOR POSTWAR MARKETS

Plant additions will enable us to manufacture small and medium size items in household or office appliance, automotive or mechanical fields. Will finance or buy outright. We invite inquiries to: Midland New Products Dept., 10605 Madison Ave., Cleveland 1, Ohio.

# MIDLAND

CHRISTENSEN

# POWER BRAKES

## CCJ NEWSCAST

(CONTINUED FROM PAGE 92)

### Chevrolet Provides Veteran Training

Returning war veterans desirous of becoming automobile service men as a vocation in civilian life will find a comprehensive program available for their use, set up and functioning under the sponsorship of the Chevrolet Motor Division of General Motors Corp. This "on-the-job" training program is conducted in close cooperation with the Veterans' Administration and other federal, state, county and city agencies.

Complete and varied refresher courses are available for honorably discharged Army-Navy mechanics, as are apprentice courses for vocationally handicapped veterans, all fitting them for employment as shop mechanics, bodymen and partsmen.

### Army to Release 2,000,000

The War Department expects to release 2,000,000 men within the next 12 months. They will be for the most part surplus troops, and the remainder will be men discharged for physical or other reasons.

Of the total of 1,332,000 surplus troops, more than half are in Europe, about one-third in the Pacific, and the remainder,

overseas veterans now stationed in the United States.

### Federal Appoints Distributors

Appointment of the newly formed Federal Truck Co. of St. Louis, Mo., as retail distributor for seven counties in Missouri and four in Illinois, has been announced by the Federal Motor Truck Co. Paul T. Ettinger heads the new firm. Robert E. Dusing, recently returned from two years' service in the Pacific, has been appointed sales manager.

Appointment of Beck & Darst Truck Service as Federal Truck distributors for Dayton, Ohio, has been announced by Carl Loud, sales manager.

### Delco-Remy Plans Expansion

Delco-Remy Division of General Motors has bought a 27-acre tract of land in New Brunswick, N. J., as a site for a modern storage battery plant, to be built as soon as government regulations will permit.

### Valvoline Moves Offices

The Valvoline Oil Co. has moved its headquarters to 431 Main St., Cincinnati, Ohio.

### Gar Wood Appoints Distributor

Gar Wood Industries, Inc., has named General Machinery Co., Spokane, Wash., as a distributor of its hoists, bodies and tanks.

### W. H. Grebe Co. a Crescent Distributor

The Crescent Co., Inc., Pawtucket, R. I., manufacturer of Wiry Joe wire and cable, is now represented in the Northwest area by Walter H. Grebe Co.

### Wallace Elected Chairman Indiana S.A.E.

Robert C. Wallace, vice-president and director of the Marmon-Herrington Co., and director of engineering for the company, has just been elected chairman of the Indiana section of The Society of Automotive Engineers.

### Roy D. Gates, Assistant Sales Manager

Roy D. Gates has been appointed assistant sales manager at the Blue Crown Spark Plug Co., Chicago. An erroneous announcement in the April issue of COMMERCIAL CAR JOURNAL stated that he had been made assistant manager.

(TURN TO PAGE 158, PLEASE)

You check  
your tires...



... but who checks your SPRINGS?

Call nearest Rowland Distributor. He's supplied by these branches:

ATLANTA 3, Ga., William and Harvey Rowland, Inc., 449 Marietta St., N. W.

BIRMINGHAM 3, Ala., Birmingham Spring Service, Inc., 2017 Avenue B, South

CHICAGO 16, Ill., William and Harvey Rowland, Inc., 2732 Indiana Avenue

JACKSONVILLE 4, Fla., Jacksonville Spring & Alignment Co., 137 Jefferson Street

PHILADELPHIA 30, Pa., William and Harvey Rowland, Inc., 1414 Fairmount Ave.

PITTSBURGH 13, Pa., Point Spring Co., 419 Melwood St.

If you plan to stop spring trouble before it starts put your vehicles on a regular program of spring inspection. Be sure to have this work done by spring specialists—by a Rowland Spring Distributor. Knowing springs—how to make them deliver a full lifetime of service, what to look for that might cause premature failure and how to prevent serious trouble—is the job of Rowland Spring Distributors. And they're good at it. For SPRINGS and service, mufflers, universal joints, wheel suspension parts call any one of nearly a thousand Rowland Distributors.



WM. and HARVEY ROWLAND INC.  
FRANKFORD, PHILADELPHIA 24, PENNA.

SPRINGS • MUFFLERS • WHEEL SUSPENSION PARTS • UNIVERSAL JOINTS

150th ANNIVERSARY OF AMERICA'S OLDEST LEAF SPRING MANUFACTURER



Commander John J. Bergen, USNR (inactive), at left chairman of the executive committee of Gar Wood Industries, has also been elected chairman of the board of directors. H. C. Akerberg, right, has been appointed general sales manager of the Ring-Free Oil Division, Macmillan Petroleum Corp. in New York

THIS BOOKLET CAN HELP YOU

*Save  
Thousands  
of Dollars*

**RUST**

**RUST**

**RUST**

**SEND FOR YOUR COPY TODAY**

"Save thousands" is no catch phrase—The rust preventives detailed in this lavishly illustrated, comprehensive, 40-page booklet have helped salvage literally thousands of dollars from the billion-dollar loss each year to *Demon Rust*.

Every man who has anything to do with metals will find this booklet most instructive. Write for free copy to: Shell Oil Co., Inc., 50 West 50th Street, New York 20, N. Y. or 100 Bush Street, San Francisco 6, Calif.



**SHELL RUST PREVENTIVES  
... OILS ... FLUIDS ... COMPOUNDS**

## LIGHTWEIGHT METALS

(CONTINUED FROM PAGE 53)

load that will ring the cash register.

That's a familiar story to the fleetman. We repeat only to show why there is an important place for light metals in heavy-duty vehicles right now, right after the war and not in the distant future. The pay-off is the payload.

YET weight saving is not the only advantage derived from the use

of light metals. Consider unsprung weight, i.e., the weight of everything under the springs. That includes the front and rear axles, wheels, brake drums, hubs, and other parts. Any important weight reduction in this area improves the ride for both the driver and the load; reduces the effect of road shock on the entire vehicle; and should have an important bearing upon maintenance costs. You can chalk it up as another advantage for light metals used in the right places.

Let's look at the places where light metals can be used to advantage. Consider the body. Easily the largest element of a heavy-duty truck or bus, the body can use light metals for the body sheet and roof covering and in the form of extrusions, castings, or forgings for the complete framing structure. Many operators have taken advantage of this major weight saving for many years. It needs no further argument, except this: There has been a feeling, maybe just a hunch, that neither aluminum nor magnesium can stand the weather and water and mud to which the heavy goods vehicle is subject the year around. The aluminum and magnesium producers assure us that the types of metal developed during the war give lasting quality and stability. You don't have to worry about it.

Next take the chassis frame of the heavy-duty truck or bus or trailer. That is another of the major items of weight in the vehicle. Where payload is an important item, light metals can be used to great advantage and can pay off the extra cost in a relatively short time.

NOW consider the unsprung weight items one by one. Although vehicle producers and parts makers have not shouted about it, many of them have spent a lot of time and money experimenting with aluminum axles. In fact, several large operators have had such equipment on the road for a long time. The saving in weight depends entirely upon the number of parts made from light metals. For instance, one heavy-duty rear axle in which the housing, differential carrier and caps, hub, spring saddle and plate, brake spider, brake shoes and dust shield, housing cover, wheels and drums are made of aluminum, resulted in a total weight saving of 696 lb.

A different design of rear axle, using an aluminum housing with steel tube extensions but the rest of aluminum, showed a saving of 696 lb.

It is possible for a fleetman to approach the adoption of light weight metals by easy stages. For instance, changing the wheels and hubs to aluminum on just a four-wheel job will take out from 250 lb. or more, depending upon the size of the equipment.

To be conservative, the weight of  
(TURN TO PAGE 98, PLEASE)



## Teleoptic DIRECTIONAL SIGNALS

Clear, positive, unmistakable signals visible from any angle DAY or NIGHT, at 125 feet!

This is the achievement of Teleoptic for MAXIMUM SAFETY—180° visibility—effectiveness attested by approval of STATES requiring Directional Lights.

Here is insurance of PRICELESS PROTECTION—as against price.

Look for these advantages in Teleoptic:

Guaranteed against all defects. Integral construction—large studs give less chance of shear. Finest ground glass lenses. Easy installation. Finger-tip switch control, 2 types available for extra convenience.

Made with the same engineering quality and precision that we are putting into bomb fuses and other ordnance items.



Teleoptic Finger-tip Control switch on gearshift lever.

Teleoptic Instrument Panel, with or without pilot light control switch.

Teleoptic Steering Column Control Switch.

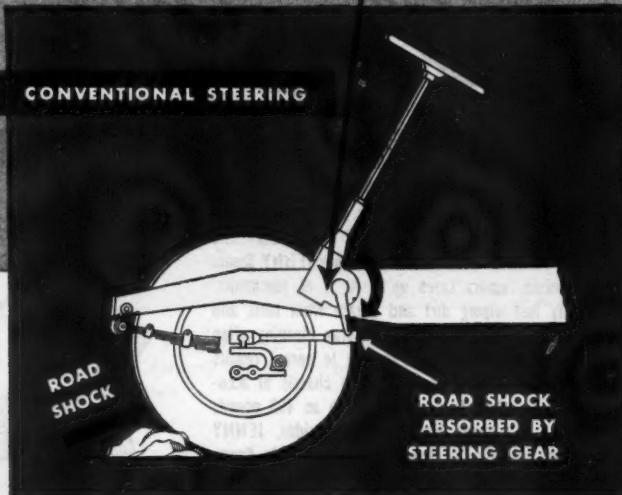
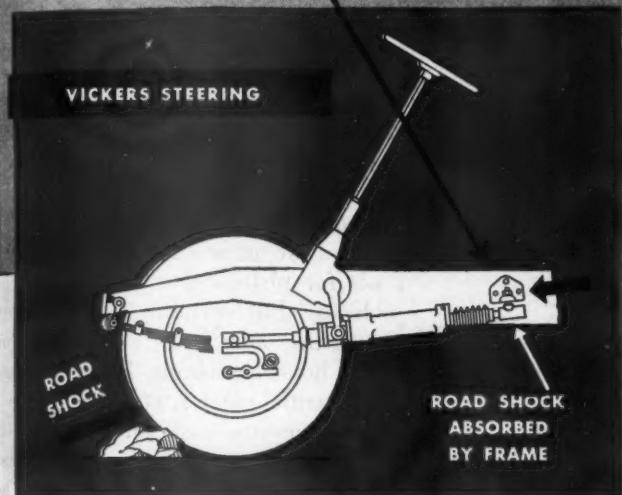
On the  
Highway it's  
**Teleoptic**

In the Air it's  
**Sel-air**

**THE TELEOPTIC CO.**  
1245 MOUND AVENUE RACINE, WISCONSIN

# VICKERS Hydraulic POWER STEERING

Transmits Road Shock Thrusts to the  
FRAME... instead of to the  
Steering Gear



With Vickers Hydraulic Power Steering, no road shock can be transmitted to the steering gear and to the driver . . . road shock thrusts are transmitted to the frame. A vehicle can be driven over the curb, through sand, and on rough ground with no "fight" from the wheel. A flat tire will not cause swerving. A light touch on the steering wheel is sufficient at all times.

Among the many other important advantages

of Vickers Hydraulic Power Steering are: greater driver efficiency by reducing fatigue to a minimum, easy application to existing chassis designs, automatic overload protection for both hydraulic system and steering linkage, and 15 years of successful operating experience on trucks, buses, road machinery, etc. Ask for Bulletin 44-30 which contains complete information about the Vickers Hydraulic Power Steering System.

**VICKERS Incorporated 1418 OAKMAN BLVD. • DETROIT 32, MICH.**

Application Engineering Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT • LOS ANGELES • NEWARK  
PHILADELPHIA • ROCHESTER • ROCKFORD • TULSA • WORCESTER

**VICKERS Hydraulic POWER STEERING is  
Simple . . . Compact . . . Easily Installed**

ENGINE-DRIVEN PUMP



POWER STEERING BOOSTER



OVERLOAD RELIEF VALVE

## LIGHTWEIGHT METALS

(CONTINUED FROM PAGE 96)

iron rear axles can be reduced by at least 40 per cent and probably no less than 45 per cent. Such axles will improve riding quality owing to reduction in unsprung weight. They can be so designed as to have essentially the same deflection and the same service life. Moreover, the stresses set up by static loads appear to make it safe to use secondary

(scrap) and un-heat-treated alloys for the housings, thus permitting still lower costs.

The same reasoning can be applied to front I-beam axles and even the dead axles such as are used in trailers. The same applies to the transmission case and cover.

WHAT can we say about the engine? When you get into the larger sizes there is ample opportunity to use aluminum and magnesium. Quite a number of heavy-duty

diesel engines have used aluminum in recent years. Confidentially, we are told that a number of commercial engine builders are experimenting with aluminum for postwar production. Where can you use light metals? In cylinder blocks, heads, manifolds, crankcase, oilpan, flywheel housing, pistons, water pump housing, bearing caps, all-aluminum bearings, blower housings and impellers, timing gear cover, and even for the con-rods.

It will be up to the engine builder to decide where to put light metals. Maybe it will not be used in all the places mentioned above. But it can be gainfully used where weight reduction will really pay off.

ALTHOUGH we have talked about both aluminum and magnesium, implying that magnesium can be used in the same places as aluminum, the fact is that most people are more familiar with aluminum than they are with magnesium. What about magnesium? Well, the magnesium industries are sure their metal can be used in many if not most of the places we mentioned above. Maybe not for pistons or cylinder heads or blocks. But certainly for the body structure and body sheets, for the axle housing, wheels, hubs, oil pans, differential carrier, etc.

Magnesium costs more than aluminum but it weighs one-third less for the same section or pattern. The producers claim that for many applications they can match aluminum section for section. That is something the manufacturers will have to settle for themselves by road testing. In any event, the magnesium producers are going after the transportation business just as soon as they get the green light.

It may be of interest to point out that both aluminum and magnesium can be produced in the forms commonly used in automotive construction—in sheets, in extruded shapes, in tubing, in sand castings, die castings, and in forgings. The war has provided enough metal handling experience to develop the most economical methods of machining and fabricating to eliminate any question of penalizing the metal for lack of good fabricating practice.

Let us repeat at this point that we are talking about potentialities which appear to be in the cards and not of

(TURN TO PAGE 100, PLEASE)

# To Keep 'Em Rolling Clean Your Trucks

## The JENNY Steam-Spray Way

Pay mileage stops when trucks go into the garage for repairs. The faster you get 'em out and rolling again the more money you save—and earn. Hypersure JENNY Steam Cleaning before repairs saves up to 40% of mechanics' time usually lost wiping dirt and grease from tools and equipment. Periodic JENNY Steam-Spray cleaning often reveals broken or defective parts in time to permit repairs before costly road failures occur... rids chassis of accumulated road dirt that often adds as much as 400 pounds to the load... reduces fire hazards. Besides, JENNY speeds garage operation by cleaning machinery, tools, floors, pits, runways, walls, windows, skylights, etc., 8 to 10 times faster than by hand methods.

Hundreds of fleet owners are helping their trucks to keep rolling by keeping them clean the JENNY Steam-Spray Way. JENNY can add pay miles to your fleet too.

Write today for complete information and prices.



HYPERSURE JENNY DIVISION OF

**HOMESTEAD VALVE MFG. CO.**

P. O. BOX 90 • • • CORAOPOLIS • • • PENNSYLVANIA





Long radiators equip 4-wheel drive tractors made by Federal Motor Truck Company and used to transport men and materiel on all war fronts.

# Performance

It's always performance that counts . . . in war and in peace. Long radiator performance, bred in engineering skill and manufacture, has made a reputation that is world-wide for dependability and endurance. Forty-two years of painstaking research and intense specialization have given extra service and outstanding performance to Long radiators, clutches and oil coolers serving in every theater of war. Long is ready when the green light comes, to serve manufacturers of peacetime vehicles.



**LONG MANUFACTURING DIVISION** Borg-Warner Corporation  
DETROIT 12, MICHIGAN • WINDSOR, ONTARIO

**LONG**  
CLUTCHES • RADIATORS • OIL COOLERS

## LIGHT-WEIGHT METALS

(CONTINUED FROM PAGE 98)

things that have been completely accepted in practice. To put it another way, the proof of the pudding will depend upon the speed with which the conversion will be attacked by everyone concerned.

LET'S summarize the picture. Since the payload is the pay-off, there is everything to gain in taking advantage of practical and economic weight

reduction. Both aluminum and magnesium appear to offer important advantages in that direction. The amount of weight saving will depend entirely upon how far the fleetmen and the manufacturer are willing to go. You can start with wheels and hubs and save a modest amount of weight; you can convert the truck and trailer body to light metal and gain a big increase in payload; you can go still further with the rear end; you can do still more with the engine. Wherever it is feasible to go the

"whole hog," you will gain a tremendous increase in payload.

Remember, too, that in general these light metals can be plated, coated, painted the same as with commonly used metals. But in certain places they have plus advantages. Take the matter of heat conductivity. Aluminum pistons and cylinder heads are without equal in their ability to conduct heat rapidly. If and when it is practicable to make aluminum brake drums for heavy duty service, heat conductivity will play a major role in keeping brakes cool and thereby conserving the life of the brake system.

END

(Please resume your reading on P. 54)

## EDITORIALS

(CONTINUED FROM PAGE 37)

dollars for 95 cents. Rail management can only see straight down the right-of-way as it was laid out in 1890, and all the help is in the same frame of mind. They still believe that they own a monopoly in transportation and that they can raise rates to any point and get away with it; browbeat labor into pay cuts, and still pour cash into Wall Street. It cannot be done. What the rails need is some young blood with imagination. \* \* \* Rails must have new blood or they will die or become Government-owned, which is the same thing.—From a debate in the U. S. Senate, June 16, 1938.

## Super Commission; Coordination

I BELIEVE that every kind of transportation should be treated alike by the Government, equally regulated, equally taxed. I think a transportation commission to control all transportation is coming. \* \* \*

All methods of transportation must be coordinated. If the Government must finance them let us face the situation and do it.—From the same debate.

END

(Please resume your reading on P. 38)

## Appointed at Graham-Paige

The appointments of Raymond J. Fitness as a vice president, and of John S. Slick as assistant secretary and assistant treasurer of Graham-Paige Motor Corp. were announced recently.

**SIMPLEX**  
PISTON RINGS  
RECONDITION for  
**LONGER LIFE**

AT THE SIGN  
OF THE  
FLYING PISTON



We're all GRAND-PAPPIES now!

The average age of the cars and trucks in service today is eight years. This means that many are still in operation at ages from ten to fifteen years... really, great-grand-daddies!

Such a record for long service speaks well for the engineers who designed their motors and is a living tribute to the men who have serviced them.

To "Rings Made by Simplex", must also be given due credit for their part in adding longer life to these year-weary motors.

These cars and trucks never had better rings in their long life than "Rings Made by Simplex". Because these rings pay extra dividends in longer life, they are in the "preferred" class.



BUY WAR BONDS AND KEEP THEM

**SIMPLEX**  
PISTON RINGS

SIMPLEX PRODUCTS CORP., Cleveland, O.

New Process

# TRACTA

JOINT

VIBRATIONLESS

CONSTANT

VELOCITY

through sharp steering angles

- Simpler and smaller in diameter than other known constant velocity joints of equal torque rating, the New Process Tracta combines compactness with wide angular range, easy assembly, disassembly and maintenance.

The four simple parts are machined from forged alloy steel, and are selectively assembled for precision slip fits. Broad sliding surfaces are hardened, ground and oil-impregnated, eliminating brinelling and reducing wear and friction losses to negligible levels.

- Designed for today's more powerful engine torques, Tracta joints are especially suitable for front-wheel drives, multiple drives, independently-sprung machine tools, conveyor, power take-offs, marine and aircraft applications. Write for sizes, torque capacities, operating and test data.



NEW PROCESS GEAR CORPORATION

Differentials, Axles, Transmissions . . . Aviation Gears

SYRACUSE, N. Y.

## SERVICE MANUAL GRIPES

(CONTINUED FROM PAGE 52)

### Suggests Slick Paper and Exploded Pictures

THE GRIPER DEPARTMENT,  
DEAR SIRS:

We have over 350 vehicles to maintain — service and overhaul.

Included in these vehicles are passenger cars, trucks of all sizes, crawler tractors, well ser-

**\$10**



vicing equipment, road machinery and trailers. Of all service manuals, our crawler tractor ones are the best. As for gripes, we have the following:

First, service manuals should be printed on a glazed or slick finished paper that will not absorb the grease from a working mechanic's hands. There should also be more exploded pictures and also more information regarding the use of partially worn parts, instead of concentrating on the use of all new parts for all replacements. Technical terms should be

eliminated and parts called by their popular names. The use of larger print would also be of great help. When special tools are required, this information should also be stressed in the repair manual.

We have recently discovered that the place for service manuals is not in the filing cabinets with the parts books, but in a convenient location where mechanics can use them without requesting them from the stock-room clerk or the shop foreman, as a great many mechanics do not like to admit that they do not know everything and would rather use their own ideas rather than to ask for the service manual. Since putting this procedure in practice, we have had fewer jobs to do over and we also notice that our service manuals are used a great deal more than in the past.

ALEX. F. HEROLD,  
Superintendent,  
Motor Transport Dept.,  
The Pure Oil Co.,  
Olney, Ill.

END

(Please resume your reading on P. 53)



## MARQUETTE REGISTERED U.S. PAT. OFFICE A.C. ARC WELDERS

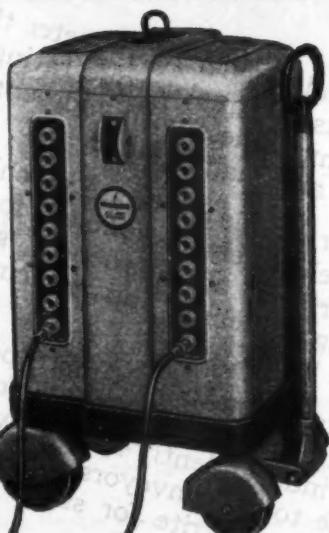
• The Granny-knot belongs in the class of old fashioned methods of drilling, tapping, screwing and riveting. The old methods were inefficient, slow and costly. When the job was finished it was no stronger than the weakest bolt or rivet.

Modern Welding is the answer to the problem of Lower Costs and Faster Repairs. Welding joins the parent metals into a solid piece which can be ground smooth to give a "just like new" appearance . . . with greater strength and reduced weight.

Marquette A. C. Arc Welders are versatile. Light fender metal or heavy truck and trailer frames, all jobs from bumper to bumper are taken in stride with this welder.

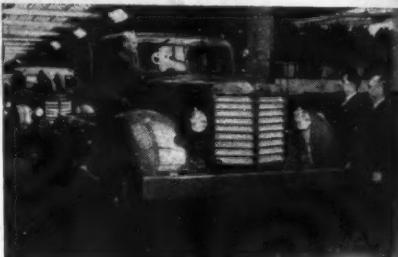
LOW INITIAL COST — LOW COST OPERATION  
NEGLIGIBLE UPKEEP — NO "MAGNETIC BLOW"  
10 Models, 125 to 400 Amps. — Completely Equipped

Buy the Best . . . Buy Marquette

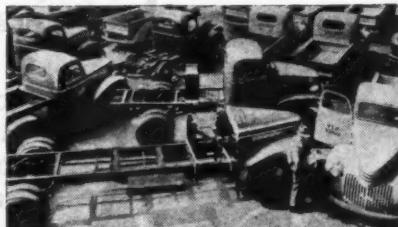


MARQUETTE MFG. CO., INC.  
Minneapolis 14, Minnesota

## MARQUETTE REGISTERED U.S. PAT. OFFICE WELDING Equipment ELECTRODES AND SUPPLIES



J. D. Porter, works manager, Federal Motor Truck Co., Detroit. OK's for shipment one of the first new giant model 60MA, 203-in. wheelbase units to be produced while Carl Loud, right, sales manager, and W. H. Baas, assistant sales manager, look on



Assembly lines at Chevrolet plants continue at a high peak on military trucks for the army and navy, together with limited production of essential civilian trucks. Above is a yard scene showing varied current model Chevrolet trucks now in production — army and navy trucks, school bus chassis and cab, light delivery pick-up and a ton-and-a-half chassis and cab

## QUIZ ANSWERS

CCJ Quiz on Page 80

1. d. He'd be from North Carolina and likely favor "Carolina Moon Keep Shining." Latest available figures from the Federal Works Agency show that North Carolina has over 60,000 miles of highways under state control. Second in mileage is Virginia with 46,000 miles.

2. a. Dick Whittington, here's your street of gold. Allied military engineers unwittingly used \$1,000,000 of gold-bearing rock as a surfacing material. The gold ore looked just like ordinary stone.

3. d. President Truman. Between 1924 and 1926, Harry Truman, after his defeat for re-election as County Judge of Jackson County, toured the United States for the Good Roads Assn. When, therefore, in 1926 he was elected Presiding Judge (equivalent to chairman of County Commissioners), he had ideas that his county needed better roads, and he began immediately to plan a new system of roads. His road program brought him recognition all over the state of Missouri.

4. b. Stabinol, produced by Hercules Powder Co., is a newly developed resin that is supposed to make soil water-proof and thus put an end to muddy roads. Stabinol is a dry powder and is mixed with the top few inches of soil. Only a small amount of the compound is needed, about 1 per cent of the total soil treated. A water-proof surface is then obtained. At less than 10 cents per pound, about 5 lb. is needed per square yard, and the soil stabilization is believed to last for years. It has already been used on roads and airplane landing fields in this country and abroad.

5. c. In 1893, when the Office of Road Inquiry was created, jurisdiction over Federal roads was placed with the Secretary of Agriculture. Then, in 1916, with the passage of the Federal Aid Road Act, Federal aid for highway construction too came under the Department of Agriculture. Under the reorganization of July 1, 1939, though, all functions of the Secretary of Agriculture with respect to public roads were turned over to the Federal Works Administration.

6. c. It's no subsidy at all, because the Federal money came directly

from the highway users anyway. Exercise revenue from lubricating oils, gas, manufacturers' tax on trucks, tires, and accessories, and auto use tax has in each of the past four years exceeded the amount Washington is offering to spend on highways. Here are the revenue figures:

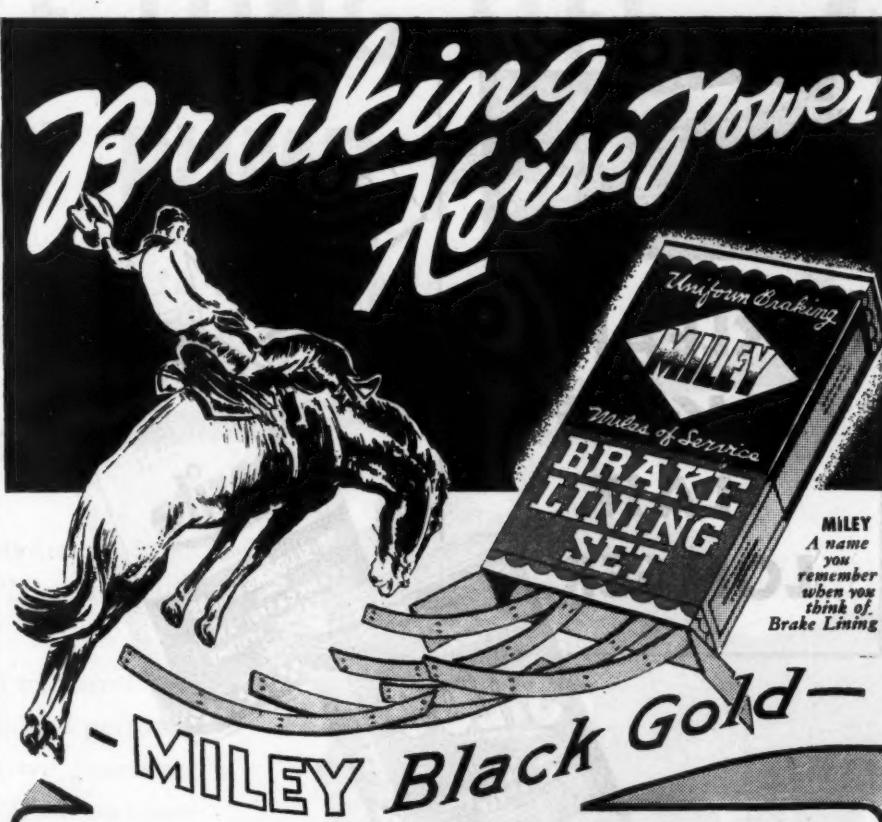
1940-41	\$537,526,000
1941-42	604,449,000
1942-43	522,863,000
1943-44	534,365,000

7. d. It is fairly generally agreed that moisture and temperature

changes, rather than the weight of trucks, are chiefly responsible for most of highway maintenance costs.

8. b. In Belgium. The ABC (American-British-Canadian) Highway is the Belgian counterpart of the Red Ball Highway system in France. The ABC was born with the capture of Antwerp by the Allies. Stretching across ancient cobblestones, dirt, and modern concrete, convoy operations on the road required the service of 20 truck companies.

(TURN TO PAGE 106, PLEASE)



FOR braking the Horse Power—safely, evenly and smoothly—on your cars and trucks, install the brake linings that have been perfected for wartime requirements for new and higher standards of braking power and longer wear—**MILEY BLACK GOLD**. For over 22 years Miley Brake Linings have been a standard for better brake linings and service, they've become nationally famous for safer, smoother stops.

Write for full details and prices of our 7-day exchange service.

**The L. J.**  
1060 West Adams St.



**Company, Inc.**  
Chicago 7, Illinois

Plants in Chicago, Illinois and North Manchester, Indiana

## QUIZ ANSWERS

(CONTINUED FROM PAGE 105)

9. a. A large magnetized roller attached to a two-wheel trailer is used to pick up nails and other ferrous products on Michigan highways. A generator on the trailer magnetizes the slowly revolving roller. At a certain point the roller becomes demagnetized, dropping its catch of potential puncture makers into a receptacle. The magnet will pick up

anything from a small tack to a crowbar. Last fall, the apparatus picked up 1300 lb. of bottle caps, nails, spikes, bolts, pieces of tin cans, etc., from 1452 miles of pavements.

10. d. Auto tracks. Germany's program of superhighways, begun in 1933, was made the responsibility of the nation's railroad construction engineers. The roads were built like railways, too, entirely on new rights of way. Curves were made as gradual as on railroads, and grade crossings were forbidden. The real pur-

pose of the roads, as the world has learned, was to speed the movement of Nazi Armies. The Germans have learned, though, that the roads could be used in both directions.

END

(Please resume your reading on P. 82)

## GRIPPE DEPARTMENT

(CONTINUED FROM PAGE 51)

splendid mechanical device it most assuredly is—the best, in fact, that this hectic world affords. Yet, not as a whole but individually, each particular make of car in our experience is infested with nests of mechanical bugs that we can only view with sordid distaste. They gorge on our profits and leave behind grief in heaps and mounds. Only at the operating end of the business is this residual litter visible to the all-seeing eye of our figure-mechanics in the front office and to the boys who wield the scepters of mechanical authority back in the shop.

Individually, we take pleasure in seeing our mechanics, out back, gathered around the oil burner and busily engaged in nothing more portentous than grinding off some embryo gems of wit. It's a good sign. It means that the cars are all out rolling on the pavement. That's our business, and needless to say, we like it. When the mechanics are comparatively idle, the drivers and the machines are out hitting the ball, and vice versa.

But when the mechanics are submerged up to their eyebrows in parts and grease—out front we're up to the hair level in grief and aside from routine maintenance, or remotely possible wrecks—we can only credit our fits of melancholia to the mechanical termites which gnaw at the sensitive marrow of our business bones.

Here is a heavy commercial car that cost us two oildrums full of silver. From frame to roof, in power, in structure and in utility, I would personally put it against anything that rolls a wheel. On the other hand, as to the fuel pump which apparently the makers just absentmindedly stuck on it, I wouldn't take it as a gift to fuel a chinch bug with the sciatica.

After a few thousandths of an inch  
(TURN TO PAGE 108, PLEASE)

**CLEAN ENGINES LAST LONGER**

**TO CLEAN OUT THE ENGINE**

**TO KEEP IT CLEAN**

Smooth running, long lasting power requires a clean engine—an engine free of sludge, gum and acid which accumulate in the lubricating system and cause the motor to become sluggish and unresponsive. These petroleum residues are a major factor in destroying engines.

LOOSITE and SILOO, swift-working solvents of petroleum residues act quickly and safely to eliminate sludge, gum and acid. LOOSITE cleans out the engine—then SILOO added to

fresh crankcase oil keeps it clean. A simple, harmless, economical method of obtaining maximum performance and longer life.

Nowadays when every mile is precious, and every lost day serious, preservation of irreplaceable motors is vital. Get the full story and use LOOSITE and SILOO. You will be repaid by better running and longer lasting motors.

If you heat with oil—write for information on  
SILOO FUEL OIL TANK SOLVENT.

**PETROLEUM SOLVENTS CORPORATION**  
331 Madison Avenue, New York 17

# Only HEIN-WERNER HYDRAULIC JACKS

## HAVE LONG LIFE "HEINITE" PUMP PISTONS

--guaranteed to stand up in service  
ten times as long as pistons previously used

Year after year, Hein-Werner Hydraulic Jacks prove their dependability . . . They are *built right*, as well as priced right.

The "HEINITE" piston is an exclusive feature, and the superiority of design and performance of this piston is such that we guarantee that it will stand up in service at least ten times as long as pistons previously used.

Another great feature is the leak-proof hydraulic unit of all models in this great line.

These jacks are compact, sturdy, super-powerful, and easy-operating. They are factory-tested at  $1\frac{1}{2}$  times their rated capacity, and are absolutely dependable.

Made in models of 3, 5, 8, 12, 20, 30 and 50 tons capacity . . . For details, consult your Hein-Werner jobber, or write us.



20 TON MODEL  
ILLUSTRATED

**HEIN-WERNER MOTOR PARTS CORP., WAUKESHA, WISCONSIN**

## GRIPER DEPARTMENT

(CONTINUED FROM PAGE 106)

of wear, the pump just takes quietly to its bed, and there's nothing to do but call in the mechanical doctors from the back room. We don't like this illness in the family. The mechanics despise the device with unalloyed technical fervor. It's just a plain case of poison.

It takes two men with a search warrant to dislocate this animal from its

local environment — and the like, in reverse, to get it back in the bosom of its mechanical family. Why the manufacturers focus all their facilities and untold skill to turn out a splendid \$6000 commercial car, and then deliberately cripple it with such a mechanical nightmare is something I cannot fathom, were it writ on tablets of stone.

At the moment, I cannot recall a single make of car in our experience, and as excellent as that car in general may be, that is not infected by

from one to a half dozen lots of specific mechanical virus that perennially lays that car on the shelf.

I should invite the automotive manufacturers to get out the engineering spray gun and get after these mechanical bugs. As decorative as it might be, after all, no one wants a centipede in the horse-radish.

JACK BRONTE,  
Grass Valley, California

### Unmuffled Tale of Muffler Tail Pipes

THE GRIPER DEPARTMENT,  
DEAR SIRS:

Recently, having occasion to inspect a tail pipe and muffler replacement job, I wondered at the consistency of auto truck manufacturers in locating these important parts of a motor in the lowest, hard-to-get-at place on a truck. After a good look at the turns, bends and kinks in the tail pipe I ceased to wonder why mechanics spoke so many strange languages and why we are compelled to install new tail pipes from six to nine months on so many trucks.

\$10

We struggle to disconnect the tail pipe from the muffler. This connection is so rusted and corroded that one end of the muffler usually gives way in the struggle. We struggle to manipulate the pipe through all the ins and outs of the chassis and when this is finally accomplished, we wonder if we have enough energy remaining to install the new part.

Seeing that we are launched upon a wondering campaign we also wonder why the material used in the make-up of mufflers and tail pipes is not heavier and of better gas exhaust resistance. The difference in weight of heavier material would add but little to the weight of the truck.

We also wonder why a muffler and tail pipe are so placed that they are attacked continuously on the outside by road water, dirt and mud and on the inside by condensation settling in the low spots due to its low level compared to the motor level. But we cease to wonder "why" when it is very evident that the restriction to free get-away of gases causes "pockets" in the tail pipe and muffler and in a very short time a hole develops in these pockets. It is a known

(TURN TO PAGE 110, PLEASE)



The English Setter . . . eyes and ears of the huntsmen. Graceful stance, fine hair texture and heavy spotting are essential to the Setter thoroughbred. But the experienced judge digs deeper for quality . . . looks for an alertness of expression which singles out the prize-winner.

# there's always one that's tops



In ignition parts, too, quality is hidden, but obvious to experienced drivers. Ask them what they look for in ignition parts, and they'll snap right back: trouble-free performance under all conditions . . . stamina that helps take them "there" and bring them "home". That's why these finer Blue Streak parts are tops with the man at the wheel.

## BLUE STREAK

IGNITION PARTS

MOTOR  
STANDARD



NATIONALLY FAMOUS FLEET OWNERS  
CHOOSE BLUE STREAK

Costs a little more, sure! But today's hard-driven trucks demand better parts to help them stretch the mileage.

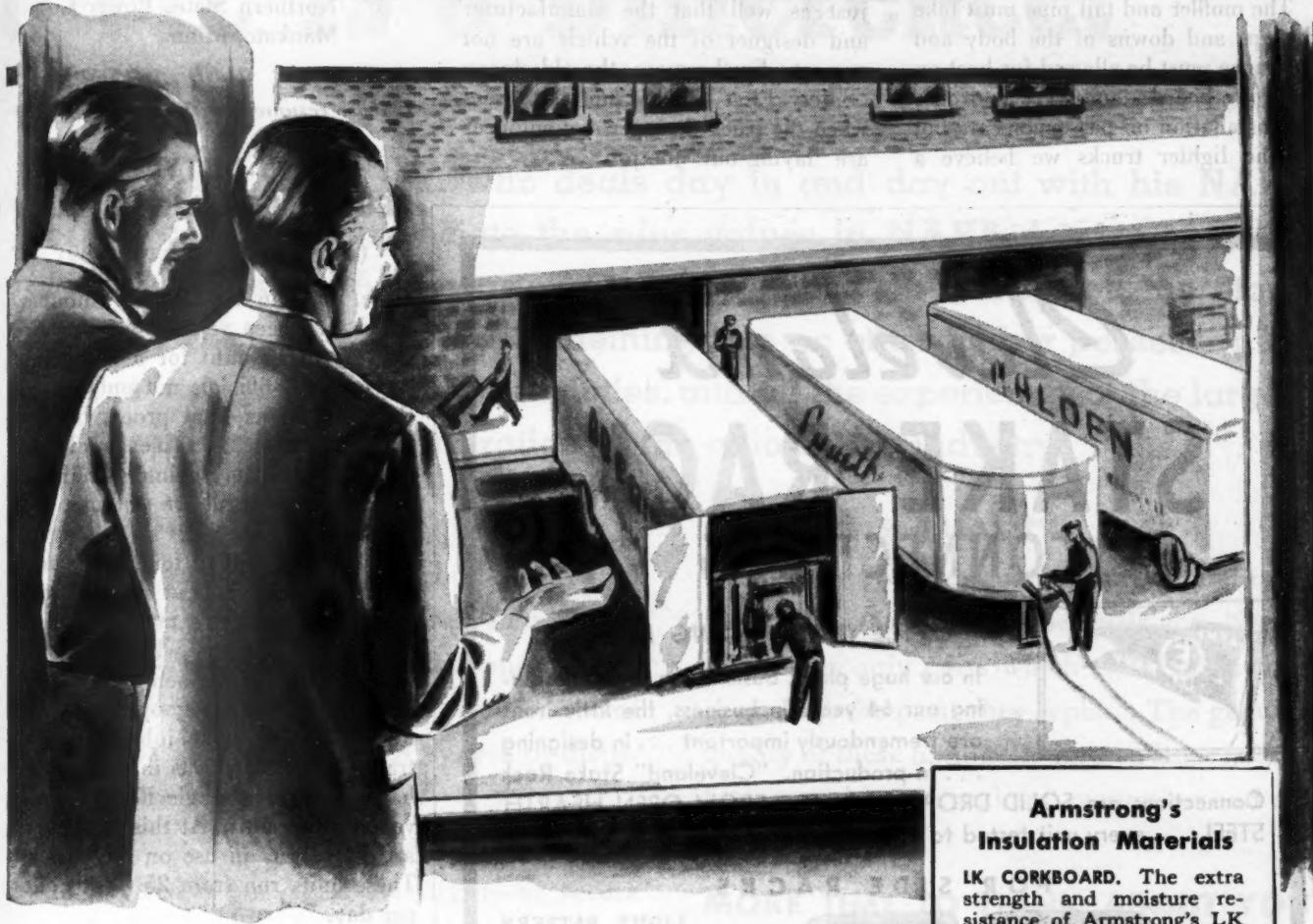
## STANDARD MOTOR PRODUCTS, INC.

37-36 NORTHERN BOULEVARD

LONG ISLAND CITY, N.Y.



# Refrigerated trucks can follow any engineering trend... but they all must be EFFICIENT



DRY ICE, power unit, hold-over brine—whichever one you choose to refrigerate your trucks depends on many factors. And there's room for honest difference of opinion. But, whichever you use, one thing is certain. You'll want that cold to be held efficiently.

Insulation makes a big difference in the range, capacity, and operating cost of any refrigerated hauler. It will pay you to look now into insulations for your post-war low-temperature trucks to find out which can best serve your needs.

Armstrong can help you in

several ways. It offers tested and proved insulation materials—LK Corkboard, Fiberglas\*, and Temlok—each ideally suited for its particular purpose. In addition, if you should encounter any problems in applying these insulations, Armstrong's engineers will lend their long experience and expert knowledge to help you find thoroughly practical solutions.

For complete information, write to Armstrong Cork Company, Building Materials Division, 3506 Concord Street, Lancaster, Pennsylvania.



## Armstrong's Insulation Materials

**LK CORKBOARD.** The extra strength and moisture resistance of Armstrong's LK Corkboard make it ideal for all heavy-duty equipment. This lightweight insulation is long lasting, easy to handle on the production line. It reduces vibration, helps to support the load.

**FIBERGLAS\*.** Spun from molten glass, felted and bonded into semi-rigid bats—Fiberglas is light in weight, efficient, and low in cost. It will not sag, burn, decay, or absorb odors. It is verminproof and fungusproof.

**TEMLOK.** This highly moisture-resistant fiberboard is made from long-leaf pine. It is rigid, light, strong, low in cost, and easy to handle.

## ARMSTRONG'S EQUIPMENT INSULATION

LK CORKBOARD • FIBERGLAS\* • TEMLOK

## GRIPER DEPARTMENT

(CONTINUED FROM PAGE 108)

fact that exhaust pipes and mufflers located on the level with, or above the motor level, last longer than those installed below the motor level.

The muffler and tail pipe must take the ups and downs of the body and clearance must be allowed for heat on the floor boards, and we can excuse the installation on passenger cars but on the lighter trucks we believe a

good engineer spending a few sleepless hours on this problem can relieve the owners and mechanics of many wasted hours and considerable expense.

When a mechanic crawls out from under with dirt in his eyes, grease on his face plus skinned knuckles it is just as well that the manufacturer and designer of the vehicle are not present. Furthermore, the old slogan "Safety First" should not be absent when the truck designer and engineer are "laying out" the job.

Each make and type of truck offers its own problem in the elimination of bends and location and, no doubt, considerable thought is necessary to overcome all obstacles but I believe the subject worthy of consideration.

M. J. PERKINS,  
Service Dept.,  
Northern States Power Co.,  
Mankato, Minn.

END

(Please resume your reading on P. 52)

## HEAVY-DUTY TIRES REUSED FOR LIGHT DUTY

(CONTINUED FROM PAGE 69)

same position near serial number, which has been rejected by our tire man as being unfit for a recap job.

The OPA officials not only accept this method as final proof, but approve the plan as a means of conserving tires and saving man hours for more constructive maintenance work. Tires marked as above are then easily classified for use on units used for short hauls at slower speed.

The value of this method will be even more obvious when you consider that we have some rejects on every one of our city-operated tractor trucks and stake jobs. One city trailer has four rejects in use and we have not had a single flat tire in a year on this unit. At this time there are 14 rejects in use on city trucks. These units run from 25 to 85 miles per day.

### Rejects Defined

YOU may ask what we classify as rejects. In our tire dealer's set-up, he positively turns back all casings with loose shoulders or play separations. Another type is a carcass, regardless of amount of rubber on the tread, which some driver injured by running flat, causing inside cords to loosen or separate. Tire rejects in these categories, although unsafe and unprofitable for over-the-road-use, do afford us a surprising amount of safe and trouble-free miles in city use.

Besides these benefits, which actually amount to taking the place of new tires while they hold up, we get good mileage on our recaps, as we cooperate with our dealer in having the work done in ample time to assure stronger casings, so vital to suc-

(TURN TO PAGE 114, PLEASE)

# "Cleveland" STAKE RACK CONNECTIONS



### LITTLE IRONS DOING BIG JOBS

In our huge plant, busier than any time during our 64 years in business, the little irons are tremendously important . . . in designing . . . in production. "Cleveland" Stake Rack

Connections are SOLID DROP FORGINGS FROM OPEN HEARTH STEEL . . . every unit tested to guarantee security and strength.

#### FOR SIDE RACKS



LIGHT PATTERN  
No. 2585B

Stock  
 $2\frac{1}{2} \times \frac{1}{8}$

HEAVY PATTERN  
No. 2586B

$3 \times \frac{1}{8}$

#### FOR END GATE



LIGHT PATTERN  
To apply outside  
of racks

No. 2591B

Stock  
 $2\frac{1}{2} \times \frac{1}{8}$

HEAVY PATTERN  
To apply outside  
of racks

No. 2592B

$3 \times \frac{1}{8}$

A set consists of two pairs (opposite hands) which is enough for one complete end gate. Cut shows right hand.

The CLEVELAND HARDWARE & FORGING Co.

Established 1881

3264 EAST 79th ST.

CLEVELAND 4, OHIO

# with Your NAPA Jobber

## there Is a Difference!

● Only the repairman who deals day in and day out with his NAPA Jobber can fully appreciate the *plus* values in NAPA service on parts and supplies . . . An occasional pickup doesn't begin to tell the story.

The NAPA Jobber *has* something that no other jobber possesses. He has at his command all the facilities, and all the experience, of the largest independent parts organization in the automotive industry.

### HOW DOES THIS HELP YOU?

For one thing, it means that your NAPA Jobber always has in stock the great majority of the parts you need for cars, trucks and tractors of all makes. Scientific methods of stock control made possible by the NAPA system of distribution, are responsible.

Moreover, it means that your NAPA Jobber can replenish his stock overnight—or secure the seldom-needed parts that no jobber can afford to stock—from his nearby NAPA Warehouse.

The 38 NAPA Warehouses that blanket the country maintain master stocks of all NAPA lines. Your NAPA Jobber doesn't have to wait for "shipment from the factory." And neither do you!

*Your NAPA Jobber  
is a Good Man to Know!*

### ONLY ONE QUALITY

There can be no doubt about the quality of the NAPA parts your jobber sells you. NAPA distributes only parts which equal or surpass in quality, the parts they replace. The genuine quality of these nationally-known lines is doubly assured by the makers' reputation and the NAPA Seal.

### MORE TIME TO THINK ABOUT YOU

Finally, because the NAPA Jobber has the support of national organization—of practical systems and methods that cut down the time he has to spend on details and "paper-work"—the NAPA Jobber has *more time* to acquaint himself with *your* problems, and to gear his own organization to help you meet them. To put it briefly—



★ Buy MORE War Bonds—and KEEP Them

NATIONAL AUTOMOTIVE PARTS ASSOCIATION • DETROIT 1, MICHIGAN

## HEAVY-DUTY TIRES REUSED FOR LIGHT DUTY

(CONTINUED FROM PAGE 110)

Takes plenty of punishment  
... THEN TAKES PLENTY MORE  
worth including in your postwar plans

### "U.S." Naugahyde upholstery



No sissy material this! "U. S." Naugahyde takes all the punishment truck driving can give a fabric coated material. It resists scuffing, edge-wear, wrinkling, abrasions . . . and that's not all!

"U. S." Naugahyde also resists the punishment of weather and deteriorating agents. It is equally indifferent to attacks of moisture, oils, greases, alcohol, acids and other agents. It is easy to clean too—with plain soap and water. And for special uses, there's "U. S." Flameproof Naugahyde.

At this time, "U. S." Naugahyde is standing up under the toughest punishment of all . . . war. But information that should be useful to your postwar planning will be furnished on request. Write us today.

**UNITED STATES RUBBER COMPANY**  
COATED FABRICS DIVISION • Mishawaka, Indiana  
Serving Through Science

Listen to "Science Looks Forward"—new series of talks by the great scientists of America—on the Philharmonic-Symphony Program. CBS network, Sunday afternoon, 3:00 to 4:30 EWT.



cessful recapping. Next, our dealer stands back of his work. If a tire which he accepts for a recap should blow out prematurely he adjusts it.

Therefore, he uses the best and most complete precision power equipment for inspections as the market affords. In fact, he regards careful inspection to check all carcass weaknesses as the primary factor of good recapping practice. For this reason, the percentage of road failures on tires which he recaps for us is no greater than ordinary puncture mishaps on new tires. Obviously, these results save us labor through minimizing tire changes on the road.

#### Four Point Tire PM

OUR prewar tire maintenance program was based on four basic factors:

1. Carrying the recommended air pressure.
2. Avoidance of overloading.
3. Keeping wheels in proper alignment.
4. Keeping brakes in good condition.

Of course, these were supplemented by training drivers in the art of careful driving rules. The importance of this factor was, and still is, emphasized from the actual facts—that mileage does vary up to 20 per cent between good and careless drivers under all other similar conditions.

Under those simple but basic rules we built up an average of 60,000 miles on original treads of trailer tires, and from 40,000 miles to 50,000 miles on rear tractor tires. This variation, significantly, depended on driving methods; no more, no less. That still holds true.

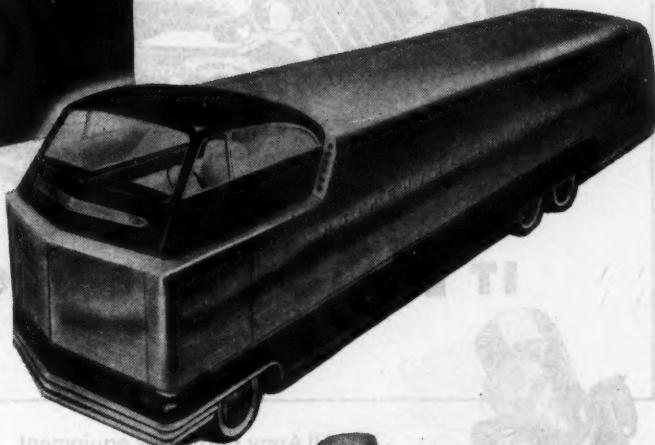
The same rules, only more vigorously applied, are used on our wartime synthetic tires. We watch air pressure very closely, as any violations spell trouble. We find the synthetic tires stand up remarkably well under proper treatment, as exemplified in the figures, which average 80 per cent of former mileage on prewar tires, as named above. Recaps are correspondingly good. In this respect, the carcass is every-

(TURN TO PAGE 116, PLEASE)

SHOCK PROOF

COMFORT for  
TOMORROW'S  
drivers seats

This longhaul truck of the future is designed by Dohner & Lippincott, New York Industrial Designers. Note the alternate drivers' seats of Koylon Foam which are adjustable from erect sitting to full reclining.



Ten years ago, a new era in comfort began with the introduction of "U.S." Koylon Foam. Made of buoyant latex with millions of inter-connecting air cells, Koylon fairly *breathe*s comfort . . . and keeps constantly clean and free of dust, dampness, odor. Koylon is one solid piece of solid comfort—there are no parts that need repair, renovation and replacement. Thanks to this, Koylon is amazingly durable and free of costly maintenance. Upholstery lasts longer, too, over Koylon because it yields to pressure evenly and there are no points of concentrated wear.

When Comfort Engineered "U.S." Koylon Foam returns after the war—its shock and concussion absorbing qualities will be a boon to your driver, by combating fatigue so costly to him . . . and you. Keep Koylon well in mind for your future trucking plans.

Comfort Engineered

"U.S."  
*Koylon*  
FOAM



MISHAWAKA, INDIANA

UNITED STATES RUBBER COMPANY

Serving Through Science

## HEAVY-DUTY TIRES REUSED FOR LIGHT DUTY

(CONTINUED FROM PAGE 114)

thing. Hence, we gain immeasurably by sticking to a tire man who positively refuses to recap a casing that should not be recapped.

**I**N OPERATING our fleet of 60 tractor trucks and 78 semitrailers in over-the-road-service, and 13 stake trucks for city pick-ups, tires always

have been a major factor of operating costs. Needless to say, wartime operating conditions have aggravated the problems no end. The benefits gained from this extra-service-from-old-tires plan briefly summarized are:

Rejects actually take the place of new tires on city units, up to a full year of trouble-free service. Besides the labor saved in our maintenance shops, we save money. We can keep units working that might otherwise be idle and earning no revenues. The plan conserves rubber, so vital to the

war effort, so necessary to home front transportation.

It saves in another way. The materials and labor put in recaps are wasted if the work is improperly done or applied to weakened carcasses unable to stand gruelling work on the open road. We would waste labor changing tires when premature failures happen because of shoddy or careless workmanship in the tire rebuilding shop. And, finally, several OPA inspectors said they were glad that we had worked out this plan as it saved their time as well as ours.

**END**

(Please resume your reading on P. 70)

### Stalled Vehicles Account for 25% of Indiana Traffic Fatalities

Concerned at the high death rate due to collisions of moving vehicles and those stalled in the roadway, Indiana State Police are intensifying enforcement against drivers who leave unprotected cars and trucks on the highway's traveled portion.

Twenty-five per cent of the state's 168 traffic fatalities the first three months of the year were attributed to two-car crashes involving a vehicle parked in the road, it was disclosed by Colonel Austin R. Killian, state police superintendent.

He reported that two-car collisions, with one stopped on the pavement, accounted for 43 per cent of the deaths in rural accidents of this type.

Principal target will be drivers of transport trucks, since state police statistics show that trucks figured in all but two of the rural accidents reported. An effort will be made to educate trucking companies and associations to observe a state law requiring that vehicles abandoned outside municipalities be marked by warning signals.

### French Truck Companies Operate in Europe

Forty-three French truck companies are being operated in France, Belgium, Holland, Luxembourg and Germany, for the primary purpose of carrying cargo and displaced personnel.

Sixteen 6-ton units and twenty-seven 3-ton units are in service. Eleven of these 6-ton units operate on Line of Communication runs hauling cargo from Rouen and Le Havre to Paris. One such unit has an L of C run from Cherbourg to a depot in the Paris area.

Top priority on shipment of cargo goes to the hauling of Civil Affairs Supplies, followed by the movement of displaced persons and refugees, French produce, and movement of Army cargo when orders for movement of priorities 1, 2, and 3 are not outstanding.

This trucking system has been in operation under the direction of the Transportation Corps since Feb. 16, 1945.

## IT HAS TO BE GOOD!



All Army and Navy equipment must have the tough, rugged qualities of endurance. To be American — it has to be good — the best. We are genuinely proud that our products are in accepted use, in both Army and Navy mechanized equipment.

## BLOOD BROTHERS UNIVERSAL JOINTS

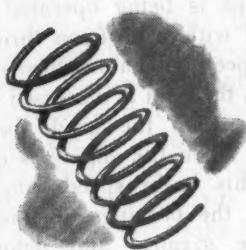
FOR EVERY NEED OF POWER THROUGH ANGULARITY

BLOOD BROTHERS MACHINE CO.

ALLEGAN, MICHIGAN

DIV. STANDARD STEEL SPRING CO.

# about Rayon-Cord Tires



6



7

**Rayon tire cord retains more tensile strength at high running temperatures. Like spring steel, it can stand an almost infinite amount of flexing.**

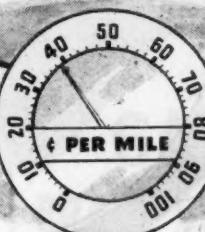
**Rayon is man-made . . . therefore its physical properties are uniform and can be scientifically controlled.**

**MORE SAFETY**

**SAFETY ZONE**

Less friction heat, higher tensile strength and greater uniformity of rayon tire cords mean more safety at high running speeds.

**LESS OPERATING COST**



Rayon-cord tires give longer life, greater mileage . . . reduce impact failures, road delays, tire renewals.

## AMERICAN VISCOSE CORPORATION

*Sales Office: 350 Fifth Avenue, New York 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.; Pittsburgh, Pa.; Marcus Hook, Pa.; Roanoke, Va.; Parkersburg, W. Va.; Levistown, Pa.; Mendville, Pa.; Nitro, W. Va.; Front Royal, Va.*

## WHITE RANGE FINDER POINTS TO ECONOMY

(CONTINUED FROM PAGE 57)

transmission gear is 2800 r.p.m., the r.p.m. at which the governor is usually set. This is the maximum recommended r.p.m. and should be watched when shifting gears, especially in climbing grades with a loaded vehicle. In shifting from a slow speed to the next higher speed under these conditions the engine

should be accelerated to this maximum speed before the shift to the faster speed is made. This maximum speed also should be watched when the vehicle is going down hill and being operated in transmission gears, using the engine as a brake. Under these conditions the engine speed should not be allowed to exceed 2800 r.p.m. which is shown when the pointer reaches the outer end of the spiral line for that gear in which the truck is operating.

Exceeding this maximum engine

speed, under either light or loaded conditions when operating in any transmission gear, tends to shorten the life of the engine due to the excessive loading of bearings and excessive piston speeds and vibration.

### Minimum Engine Speeds

THE engine develops greater force or torque at speeds from 1100 r.p.m. to 1400 r.p.m. than it does at higher speeds. For this reason, when the engine is being operated under full load with wide open throttle at higher speeds, it automatically slows up, when the load is increased as, for example, when the grade becomes steeper. When the engine is operating in this lower speed range, the loads on the bearings, pistons, and rings are greatest and detonation which increases these loads still further is most likely to occur. For these reasons it is not good practice to let the engine lug in this lower speed range. When the engine starts to slow up under loaded conditions and approaches this lower speed range, it is better practice to shift into a lower transmission gear, allowing the engine to operate more easily (at part throttle) at a higher speed.

The engine speed (r.p.m.) indicating device on the speedometer dial will show the driver when the engine begins to approach these undesirable low speeds as it slows up under load.

### Ideal Operating Range

THE r.p.m. scale on the pointer from 1700 r.p.m. to 2400 r.p.m. is white in color. This white portion of the scale indicates the most economical speed range for cruising or hard pulling. When the engine is operated in this speed range fuel economy will be better, lubrication will be improved and performance or responsiveness of the engine to the throttle or accelerator will be best.

The chassis speed at which these various engine speeds occur depend on the tire size, rear axle gear ratio, and transmission ratios. These factors vary with different trucks as each model is built with optional and variable combinations of units. This White "Economy Range Finder" will serve to show the driver of a new truck the most economical engine speeds and transmission gears for all conditions.

END

(Please resume your reading on P. 58)



**THEY NEVER GIVE UP!**

Water Buffaloes are among the world's toughest fighters. They will tackle any opponent regardless of size.

A SINGLE  
**CENTRAL**  
**ALL-SIZE**  
**HOSE CLAMP**

SERVES OVER 100 DIFFERENT HOSE SIZES

● The Central ALL-SIZE Hose Clamp, like the Water Buffalo, is not concerned about size . . . for it serves over a hundred different hose sizes. The standard length, for example, serves any hose from 1" to 3" O.D.

● This means that with the ALL-SIZE on hand, it's not necessary to stock all kinds of different size hose clamps . . . and equally important is the fact that the ALL-SIZE has fastest clamping action, plenty of take-up, even on synthetic hose; goes on or off in a hurry without disconnecting the hose line; is leak-proof, rust-proof, self-locking; won't strip or loosen.

SEND FOR

FREE  
SAMPLE

No. 45-6C

**CENTRAL EQUIPMENT CO.**

900 S. WABASH AVE.  
CHICAGO 5, ILLINOIS

## NEW PRODUCTS

(CONTINUED FROM PAGE 59)

### P74. Pickling Compound

A new "pickling" agent to remove rust, scale, tarnish, and incrustations of cement and lime from metals is being marketed by Waverly Petroleum Products Co., Philadelphia, Pa. Troxide, as this chemical is named, is a dry inert compound. It is non-eruptive, non-inflammable, and is said to present no occupational hazards.

It is claimed that Troxide attacks the scale, not the good metal, and the surfaces are left smooth, clean and bright; thus the hazards of over-pickling are materially reduced. Troxide may be used either hot or cold.

Use Free Postcard For More Details.

### P75. AC and DC Electrode

The Eutectic Welding Alloys Co., New York, has introduced an unusual new electrode for arc welding. Known as EutecTrode 28, the new electrode is a coated special bronze alloy to be used for the arc welding of bronze, brass, and copper.

EutecTrode 28 contains an unusual combination of metals and is shielded with a newly devised flux coating that makes it suitable for use either on AC or DC.

This electrode will deposit dense and tough metal that is a good color match to most types of bronzes. It will give the welded area substantially the same corrosion resistance as these various base metals possess. It may also be used for welding copper and brass or joining these metals to steel, cast iron, or nickel alloys, and for overlaying steel or cast iron to provide a good bearing surface.

The electrode is available in  $\frac{1}{8}$  in. and  $\frac{3}{16}$  in. diameters and can be identified by a light green tip.

Use Free Postcard For More Details.

### P76. Small Parts Cleaner

The Gray-Mills Co. announces a new Parts Cleaning System, the P-72, and a new line of Agitene cold cleaning solvents.

This new parts cleaner removes carbon, grease, grime, and gum from carburetors, fuel pumps, and other parts requiring concentrated solvents. It has a "swisher" basket to produce agitation.

It is also equipped with a means for providing air agitation to speed the cleaning process. This "Agitator" utilizes the existing air supply. The tank has a hinged cover and comes equipped with an air valve, hose and fittings. This P-72 Parts Cleaning System has mounting brackets for attaching to a wall or work bench, or to the larger P-70 model.

Agitene (cold) cleaning solvents come in three types. Regular Agitene is for general purpose cleaning in

removing oils and other lubricants. Super-Agitene is a fast-acting solvent with a powerful penetrating action that quickly removes grease, tar and sludge. Speed-Agitene is used for cleaning carburetors, fuel pumps, pistons and other parts that have hard carbon accumulations, residual gums and grease deposits. It removes paint and sludge without harming metals.

Use Free Postcard For More Details.

(TURN TO PAGE 125, PLEASE)



All over America the Extra Performance Values of GATKE Brake Blocks and Liners are helping Fleet Operators maintain Tough Schedules.

The smooth, non-grabbing action adds countless miles to tire life.

Dependable holding power under all operating temperatures gives added Safety, and Protection.

The long wear life means fewer adjustments and saves maintenance time.

Many other features give added Safety and Economy. Ask your GATKE Jobber or write.

**GATKE**  
**BRAKE BLOCKS**  
**Custom-Bilt**  
for ALL  
Trucks, Tractors,  
Trailers, Buses,  
Passenger Cars,  
and Heavy Duty  
Equipment

**Gatke** **BRAKE LININGS**  
CUSTOM-BILT BLOCKS SETS ROLLS SHEETS  
GATKE CORPORATION 228 N. La Salle  
Chicago 1, Ill.

# Soft pressure does it

There's a big difference in expander-type rings. Some still stick to the old high pressure theory.

But Steel-Vent climbed to success on the soft pressure principle.

And—Soft Pressure and long life go hand-in-hand.

HASTINGS MANUFACTURING CO. - HASTINGS, MICH.

Hastings Mfg. of Canada Ltd., Toronto

## SOFT PRESSURE DOES IT— IN REBORES, TOO

A service company, operating in the far west oil fields, says: "Our records show that we have reduced our operating cost from five to three cents per mile. We believe that Hastings Rings have given us longer motor life in our re-ring and rebore jobs and have therefore been instrumental in producing this cost reduction."

★ *It's a privilege to buy War Bonds*

U. S. PAT. 2,146,997

TOUGH ON OIL-PUMPING GENTLE ON CYLINDER WALLS



**HASTINGS STEEL-VENT**  
**PISTON RINGS**

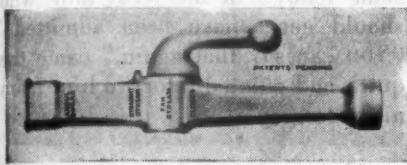


## NEW PRODUCTS

(CONTINUED FROM PAGE 123)

### P77. Dual Stream Hose Nozzle

Dugas Division of Ansul Chemical Co. announces a new dual-stream nozzle which greatly increases the fire fighting effectiveness of its wheeled models. The new nozzle permits the operator to apply the dry chemical on a fire either as a long range straight stream or as a shorter range fan stream.



With this new dual-stream nozzle, overhead fires, heretofore considered exceedingly difficult to fight, can be extinguished successfully.

Use Free Postcard For More Details.

### P78. Fire-Resisting Paint

A new paint which protects wood and other materials against fire hazard is announced by the General Detroit Corp. and the General Pacific Corp. Called Fi-Repel, it is endorsed by Underwriters' Laboratories.

Fi-Repel is made for use in factories, garages, and wherever else fire protection is necessary. It is shipped as a concentrated paste. After dilution it can be applied with a brush or spray gun to the surface to be protected. One concentrated gallon, at standard dilution, will cover as much as 185 sq. ft. with two coats. Standard color is bone-white, but tints may be added easily.

Use Free Postcard For More Details.

### P79. Skin-Protector Compound

Cadet Laboratories, Worcester, Mass., announces the release to mechanics of Sealskin, a skin-protector compound that, applied but once



Charles A. Marian, Jr. has been promoted to the new post of sales manager, Field Division of Ramsey Accessories Mfg. Corp.

daily, forms a durable, invisible waterproof coating over the skin that acts as a preventive against infection, and from which most dyes, stains and grime may be washed with soap and water without removing the protective coating.

This compound was made to conform to the one type recommended by the U. S. Public Health Service as being best suited to protect the skin against solvents and oils. It may be applied to the most tender skin, safely even over broken skin, as it is both

non-irritating and non-sensitizing. Placed in the nostrils it protects the membrane against fumes, sprays, dusts, powders and other irritants, and, containing no water, it can be used outdoors with no danger of chapping.

Executives, using firm's letterhead, will receive free a jar of Sealskin and free advice upon any dermatitic problems.

Use Free Postcard For More Details.

(TURN TO PAGE 172, PLEASE)

**CRACKED!... REPAIRED AND RESTORED TO UNIMPAIRED SERVICE THE K & W WAY**

**... in a fraction of the time, at a fraction of the cost!**

Serious engine cracks and breaks, once considered BEYOND REPAIR, can now be repaired by the K & W Mechanical Method right in your own shop. Results in an invisible repair, completed in surprisingly fast time, and guaranteed for the life of the engine.

For complete details see your jobber or write to Kerling & Company, Bloomington, Indiana.

#### No. 600 SERVICE UNIT WILL DO 24 JOBS

Everything needed to repair 24 average cracks by the K & W Mechanical Method costs so little that the savings on only one job often pays for all!



*Metallic Seal*

Guaranteed repair for 85 out of 100 block and head cracks immediately!



*Radiator Seal*

Radiator Leak? Try K & W FIRST! If K & W can't fix it, NO SEAL can!

## HEARD BY THE GREASEMAN

(CONTINUED FROM PAGE 45)

The mechanic and the driver were kidding each other about the condition of a certain tractor. The mechanic had worked on it the day before. The driver did not think much of it and frankly said that he had given it the works on his last trip but still it brought his load in without breakdown time.

"Well, I sure fixed it up, didn't I," said the mechanic and he jokingly held out his hand as though for a tip.

The driver reached his hand in his pocket and pulled out a hand full of pennies, nickles, and dimes, looked at it a moment and said, "Sorry, I haven't anything small enough!"

One unfortunate "horse" that's always in the garage is now known to drivers as the Garage Man's Companion.

## WHEN SLUDGE SAYS

## "WHOA" TO YOUR HORSEPOWER

Switch to



If motor troubles are jamming your operating schedules, it will pay you to put AMALIE H-D oil to work for your fleet at once.

AMALIE H-D is straight-run refined from 100% Pennsylvania Crude and has all the important characteristics of a complete heavy-duty oil. It has the necessary detergent quality . . . cleanses and washes away carbon and other harmful products of com-

bustion. Its anti-oxidant action keeps oil from oxidizing and forming varnish and sludge deposits on vital parts.

Its strong, tough, corrosion-resisting film—20% oilier—stands up under the toughest operating conditions.

Remember AMALIE H-D Oil — and don't forget regular AMALIE Pennsylvania Motor Oil and AMALIE Lubricants.

For Essential Trucks • Busses • Tractors • Construction Equipment

See your AMALIE Distributor  
For This A. C. D. S. Test

Your AMALIE Distributor offers you the opportunity to have the used oil from the crankcases of troublesome trucks tested and analyzed impartially by skilled laboratory technicians. AMALIE CRANKCASE DRAINALYSIS SERVICE has helped many fleet owners to put an end to costly troubles and lay-ups. No obligation.

Ask your nearest AMALIE Distributor,  
or write Dept. C J.

## AMALIE DIVISION L. SONNEBORN SONS, INC.

88 Lexington Avenue, New York 16, N. Y.

Refineries: Petrolia and Franklin, Pa.  
Plant: Nutley, N. J.

In the Southwest:  
Sonneborn Bros., Dallas 1, Texas

A certain willing and husky mechanic is now spoken of in the shop as Mr. Axlebender. He has big ears, too, and we figure this quite an advantage, a motor tells so much by its sound to one who can hear right.

At the last union meeting a bitter argument raged between two members on the admission of a certain new member. Finally, one of the opponents after a long harangue said righteously, "And anyway there are some fellows in the local now who should never have been admitted." "You can say that again," came the quick and pointed retort to him from his adversary.

"MAKING ANOTHER TAIL LIGHT, EH?" SAID THE DRIVER AS THE MECHANIC REACHED FOR THE BRUSH TO COVER A WHITE BULB WITH RED PAINT.

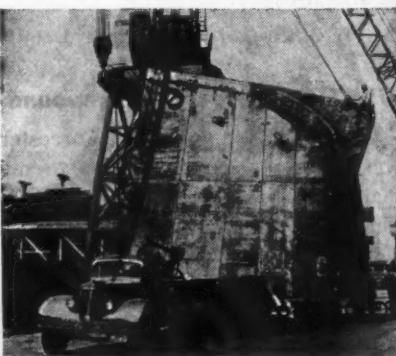
The parting shot of one arguing driver to another, "Ah, your mother should have hatched you out on a rock!" No one knew quite what it meant but it surely sounded convincing.

A bunch of drivers were discussing a model of a postwar tractor one had seen with flat top fenders, and decided for the benefit of a listening mechanic that they would never do because mechanics could go to sleep too easily on them.

—A. EGGLERON

END

(Please resume your reading on P. 46)



A 52-ton forepeak section of a Liberty Ship is being moved by a WA-34 White Super Power tractor semi-trailer unit at the busy California Shipbuilding Corp. yard at Wilmington Cal. High capacity trucks such as this are performing transportation feats which would have been considered impossible 25 years ago

# Wagner CoMaX is available in Sets, Rolls,

## Brake Lining Blocks, and Slabs



Whatever your requirements or preferences may be—whether drilled sets, rolls, blocks, or slabs—you'll find your choice in the Wagner CoMaX line. And no matter which type you choose, each is alike in the following characteristics:

1. Uniform in frictional qualities throughout the entire service thickness. As the lining wears, the same type of brake lining surface is always exposed to the drums.
2. Does not compress or swell. No changes in lining thickness take place, other than that caused by normal wear. Brakes remain adjusted over long operating periods.
3. Easy on drums. Contains no abrasive material.
4. Wears slowly. Its ingredients are carefully selected for extra-life properties.
5. Doesn't deteriorate with age. Whether in use, or on the shelf, CoMaX resists the elements.
6. Is quiet—grips silently, with no "howling" or "squealing".
7. Permits smooth, controllable deceleration. No jerking stops. CoMaX responds to the degree of brake application.

Try Wagner CoMaX on your next relining job. Let us send you Catalog BU-128 which lists CoMaX in sets, rolls, blocks, and slabs, and gives correct information for most passenger car, truck, tractor, and bus applications. Find out for yourself why Wagner CoMaX is the preferred brake lining for Quick, Safe, Smooth Stops.

**BRAKE LINING**  
is but one of several  
WAGNER PRODUCTS  
serving industry.

Other WAGNER PRODUCTS:  
• AIR BRAKES  
• HYDRAULIC BRAKES  
• INDUSTRIAL BRAKES  
• INDUSTRIAL BRAKE CONTROLS  
• ELECTRIC MOTORS  
• TACHOGRAPH  
(Recording Speedometer)  
• TRANSFORMERS

B45-4.

**Wagner Electric Corporation**  
ESTABLISHED 1891  
6470 Plymouth Avenue, St. Louis 14, Mo., U. S. A.  
HYDRAULIC BRAKE PARTS AND FLUID • AIR BRAKES • BRAKE LINING • CLUTCH FACINGS



As pioneers in hydraulic brakes, and as manufacturers of Lockheed Hydraulic Brakes for original equipment, as well as makers of hydraulic brake parts and fluid for replacement needs, WAGNER KNOWS BRAKES. Wagner also knows what qualities are required in a brake lining, and these qualities are to be found in CoMaX.

# Truck Body Industry Faces Revolutionary Period

Plans for stepping up production of commercial truck bodies to keep pace with the greatly accelerated chassis production forecast for late 1945 and 1946 were discussed by truck body manufacturers from coast to coast who met at the Stevens, Chicago, early in May, for the second annual Lindsay Structure Conference.

"The truck body industry today faces a revolutionary period," W. P. Sullivan, manager, Transport Division, Lindsay & Lindsay, told the manufacturers. "The demand of large fleet operators for standardized equipment has obsoleted pre-war methods both of body manufacture and of distribution, and it is imperative that the

truck body industry meet the challenge of this revolutionary trend if we are to continue to function efficiently as a service organization for the fleet operator.

"Although it is true that a tremendous variety of bodies are required to meet the widely varied need of specialized operating conditions, this does not mean that the truck body industry cannot adopt modern mass production methods. We have found that body parts which are interchangeable can be prefabricated on a mass production basis and still meet more than 80 per cent of the operator's requirements. For instance, the Ls stock line of all-steel truck bodies covers only 10 different lengths, ranging from 9 to 24 ft., but because the parts are interchangeable, it is possible to build 1152 different models of bodies from a basic inventory and, I'm sure you will agree, 1152 models will meet a lot of specialized operating conditions.

"This modern method of production will also mean a revolutionary change in truck body distribution," pointed out Mr. Sullivan, "and bad distribution of truck bodies has been one of the biggest headaches the national fleet has had to contend with in the past. Either the fleet could have all of its bodies built in one locality and then drive them thousands of miles to destination, which practice was highly uneconomical or else content themselves with equipment made up of a hodgepodge of designs which varied in each locality. Neither of these practices is necessary today. The national fleets can now have bodies built to their master specifications anywhere in the country with complete assurance that they will be uniform both in appearance and construction. Standardized body designs have already been adopted by a number of the large national fleets, and there is every indication that within the very near future the national fleet without a standardized design will be the exception rather than the rule."

Inventory carried by Ls Regional Distributors in 22 key points throughout the country will provide body builders with readily accessible materials from nearby warehouse stock, both for prompt delivery on new bodies and on repair parts.

An engineering clinic at the Lindsay & Lindsay plant was one of the highlights of the conference. A number of new and improved methods of truck body construction were discussed and representatives from suppliers of component parts for Lindsay Structure truck bodies were on hand to furnish technical advice on problems relating to insulation, hardware, steel platforms, power tools, finishes, etc.

## Auto-Lite To Present Safety Awards

The Electric Auto-Lite Co., working in conjunction with the American Trucking Assn. will again present certificates and awards to carriers maintaining outstanding safety records during 1945.

The 1945 contest officially closes July 31, and that all carrier applications must be received at the ATA office in Washington, D. C., by that date in order to participate. Auto-Lite will again award desk hygrometer and barometer sets to winners in the various divisions.

## PRIOR Safety TANKS FOR TRUCKS

- ATTRACTIVE
- ECONOMICAL
- PROTECTION



### SAFETY FUSE PLUG

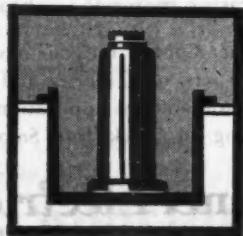
Protection against explosion is provided by this special plug which melts out when exposed to high temperature or direct flame.

### NON-SPILL CAP

Ball check in air vent of cap automatically seals cap when tank is in overturned position to prevent leakage of fuel.

### TOOL BOX WITH JACK WELL

Roomy tool box provides ample tool storage space. Special well keeps hydraulic jack upright at all times. Constructed of 12-gauge steel, electrically welded. Can be locked to prevent loss by theft.



Prior Safety Tank and Tool Box Sets have shown both economy and protection in service. They're constructed of 12-gauge steel, electrically welded and designed for heavy duty. The exclusive curved angle iron suspension gives greater road clearance. Installation is easy.

Add Prior Safety Tanks and give your equipment and cargo greater protection against fire.

C. C. J.

**WRITE OR WIRE FOR NAME OF  
NEAREST DEALER**

# PRIOR PRODUCTS

DALLAS, TEXAS.  
CLINTON, ILLINOIS

Engine-Superior-Service  
Proven for Future Possibilities



*On the side, Mister...*

**BLACKHAWK JACKS HANDLE ANY JOB**

BLACKHAWK Hydraulic Jacks deliver full power fast—at any angle, vertical to horizontal. That's why you can speed up so many shop jobs with Blackhaws—as well as handle emergency, roadside tire changes or repairs.

Blackhawk Jacks can operate horizontally at floor level because the pump handle extends outward to the operator—not toward the floor. And Blackhawk's original pump-on-side design permits such horizontal operation without need for complicated internal oil channels that make action sluggish.

For fast-action jacks, in any position—buy the best—buy Blackhaws from your Blackhawk Jobber.

A Product of **BLACKHAWK MFG. CO.**, Dept. J1165, Milwaukee 1, Wis.



# BLACKHAWK



*This seal is found only on Blackhawk Hydraulic Jacks—your assurance of a wise and safe investment.*

# Engine-Supercharger-Turbine Proposed for Future Powerplant

Powerplant of tomorrow's heavy-duty motor vehicles may be a combined diesel engine, supercharger and turbine, it was suggested before the recent Diesel-Fuels and Lubricants Meeting of SAE St. Louis Section.

The engine-supercharger-turbine combination was proposed by R. W. McLaughlin and C. F. Harms, of Elliott Co., Jeanette,

Pa., as an effective method of putting exhaust gas to work. They explained that application of the supercharger would increase the engine's power output approximately by 50 per cent, and that the turbine would perform useful work in driving the supercharger. They added that future possibilities include utilization of the diesel engine merely to function as combustion

chamber for the turbine and to drive the supercharger, with the turbine itself becoming the source of power.

A symposium on the economics of diesel engine operation established that merely replacing gasoline engines with diesels in commercial motor vehicles may be neither an easy nor direct route to operating efficiency and economy in peacetime.

From F. Glen Shoemaker and H. M. Gadebusch, of Detroit Diesel Engine Div., General Motors Corp., Detroit, Mich., came the report that automotive diesels promise to produce fuel savings of 25 to 30 per cent and to provide up to 25 per cent more reserve power for acceleration and hill climbing. However, W. M. Holaday and W. S. Mount, of Socony-Vacuum Oil Co., Inc., New York, N. Y., warned that post-war prices of diesel fuels and lubricants are likely to be higher.

They explained that the growing use of mobile diesels calls for storage and delivery facilities throughout the country, and the increasing volume is likely to rob diesel fuels of their pre-war "free rides in the barges, tanks, pipe lines, and trucks of the heating oil or industrial fuel oil distributing systems." Furthermore, they said, competition is growing in the middle-range hydrocarbons which are the source of diesel oils, and diesel users must expect to pay at least what diesel fuels are worth as cracking stocks.

Another warning came from Bryan Park, of Central Greyhound Lines, Inc., Cleveland, Ohio, who declared the diesel engine cannot rest on its present laurels of fuel economy, the advantage being lost unless related costs of maintenance can be held approximately at the level of competitive power sources. Mr. Park reported that the diesel, used as a "power package" in commercial motor vehicles, has been less satisfactory than in stationary applications because of obvious engineering problems not yet solved.

Mr. Park predicted the development of post-war of a two-cycle variable compression diesel engine, free from complicated parts and troubles, burning a variety of fuels, and satisfactory for motor vehicle service.

## Chevrolet and Ford to Build Economy Cars

Chevrolet Division of General Motors Corp. plans to build a lighter weight and more economical car in the postwar period after the fall of Japan, according to C. E. Wilson, president. Neither Mr. Wilson or other officials of the corporation would divulge any details of the car.

The announcement indicates a shift in plans of the corporation since Mr. Wilson last fall stated under questioning by the press that General Motors at that time had no plans for such a car. He did, however, say that the corporation would build any kind of car that the public demanded.

The decision to build a light car, therefore, is considered to indicate a potential public demand, and also to be an answer to the competitive challenge offered by the Ford Motor Co. which has announced that it will be in the field with an economy car to be priced about 25 per cent under the regular Ford line.

*Any Fleet Owner Knows*

... a mechanic is a man with a mind of his own. Daily contact with bus and truck troubles makes the mechanic a good judge of Fuel and Vacuum Pumps.

KEM offers fleet owners a complete line of Pumps and Parts — prefitted — designed on master gauges to replace faulty equipment. Built for heavy-duty "wear and tear" with extra margins of strength in casting, machining insulation and oversizes, KEM Fuel Pumps assure waste-free smoothness of operation and long service.

KEM also offers wide variety in Factory Rebuilts, made with the same care and precision and by the same skilled machinists who make the new KEM Pumps. Complete rebuilding and replacements of all worn parts is guaranteed. Your mechanics will appreciate KEM precision equipment that "can take it."

**Write for the name of the distributor in your territory.**

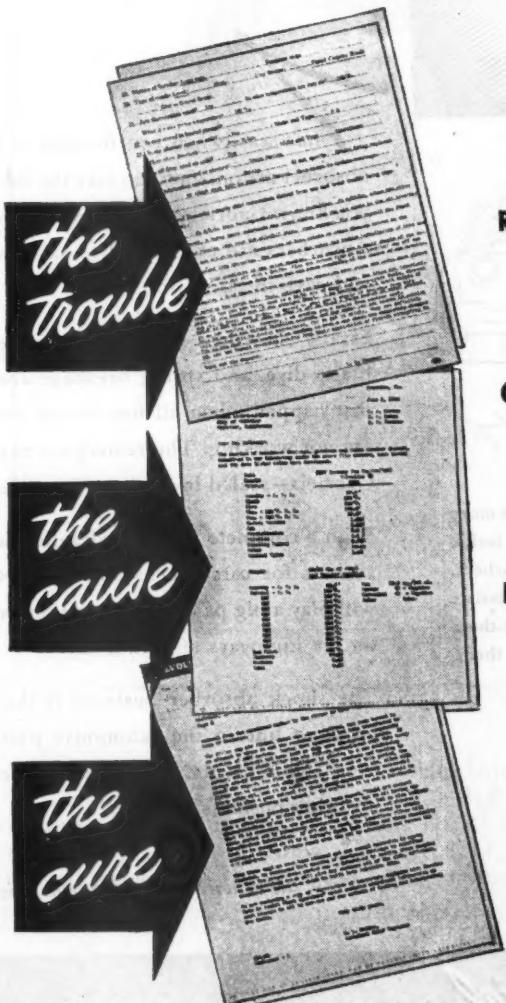
**Replace with KEM**

## VALVOLINE FLEET LABORATORY SERVICE

*Gets you out of trouble—  
KEEPS you out of trouble!*



### THIS IS HOW IT WORKS:



Take case No. 284-7, the bus fleet of a California city. A heavy tarry substance was noted coming from air vents in an oil breather cap . . . the same deposit was found inside the oil-fill pipes and valve chambers of several motors. The baffled maintenance chief called in a Valvoline man.

#### REPORT AND OIL SAMPLES FROM OUR FIELD MAN

He went over the problem with the fleet's mechanics, sent us a complete report, together with samples of the tarry deposit, drained oil, the gasoline in use, and a stopped-up screen from an oil breather cap.

#### COMPLETE ANALYSIS FROM LABORATORY TESTS

Exhaustive laboratory tests were made, their results correlated with other facts; loads carried, daily mileage, type of route, idling time, oil filters used, thermostat settings, etc. As clearly as a set of fresh footprints, this lab report led Valvoline experts to the trouble.

#### RECOMMENDATIONS FROM OUR ENGINEERS

Our engineer's letter explained the lab report, diagnosed the trouble, prescribed corrective measures, recommended certain changes in operation. This fleet averted serious damage and expense, increased the efficiency and economy of its units.

*This service is available to you without charge. Don't rely on "home remedies"—send for the doctor—the Valvoline man!*

# VALVOLINE

MOTOR OIL—THE ORIGINAL PENNSYLVANIA OIL

VALVOLINE OIL COMPANY, 431 MAIN STREET, DEPT. 41-F, CINCINNATI 2, OHIO



# ODT·OPA·WPB·NEWS

## Ceiling Cut 7½ Per Cent On Large Truck Tires

Retail ceiling prices on the larger size truck and bus tires were cut approximately 7½ per cent on May 1. At the same time synthetic rubber tires for passenger cars and motorcycles were reduced from 45 cents to \$2.20 as a result of the new retail ceiling prices.

Price Administrator Chester Bowles estimated that at the present rate of buying, the reductions will save tire users about \$23,000,000 a year. Six millions will result from the truck and bus tire reductions.

Under the new OPA regulation, the 10.00-20, 12-ply truck tire, which had a retail ceiling of \$115.15 now will retail at no more than \$107.50 each.

## 14,409 Trucks Released in April

Civilian users received 4019 light trucks, 7262 medium trucks, 3078 heavy trucks and 2221 trailers under the truck rationing program in April, 1945, according to the automotive Division of the War Production Board.

Since the rationing program became effective Mar. 9, 1942, a total of 439,005 vehicles of all types has been released.

## "Must List" for Motor Transport

The entire railroad industry has been placed on a par with the most urgent war production, the Office of Defense Transportation announced recently. Not only the railroads, but all forms of transport still suffer from a shortage of manpower, according to Robert L. Glenn, acting director of the ODT Division of Transport Personnel. He promised that every effort would be made to see that highway transport in particular is placed on the National Production Urgency list.

## Warranty Price to Users Only

Dealers may now charge warranted maximum prices for used trucks and other used commercial vehicles only in sales to users on a warranted basis, the Office of Price Administration has announced. Prohibiting truck and commercial vehicle sales from one dealer to another at warranted maximum prices establishes a spread between the prices dealers may charge each other and the prices they may

charge consumers, thus providing a margin of resale profit for placing the truck in warranted condition.

## ODT Out of Fort Wayne

The ODT Highway Transport Department eliminated its field office in Fort Wayne, Ind., on April 1 and transferred jurisdiction to the district office in Indianapolis.

## Prins Reappointed to ODT

Charles E. V. Prins has been reappointed director of information for the Office of Defense Transportation.

(TURN TO PAGE 134, PLEASE)



## Gabriel AEROTYPE HYDRAULIC SHOCK ABSORBERS



### Shocks Protect Tires

Nothing shortens tire life more than driving with worn, leaky, mal-adjusted shock absorbers. The experienced driver insists on Gabriels, and installs them when, and as he can get them.

Time was, when you thought of a shock absorber as something to save the rider. Now you know Gabriel Aerotype Hydraulic Shock Absorbers are engineered to save the car—and save the tires, too.

Erratic steering, wheel hop, curve sway, brake dive, and spring breakage are things that happen when all four shock absorbers are not working. The remedy—a new set of Gabriels—sealed-in-steel—will not leak.

With a complete line of hydraulic shock absorbers for cars, trucks and buses, Gabriel will play a big part in keeping traffic moving on the highways after V-E day.

The shock absorber business is the fastest growing line in the automotive parts business. Gabriel is the hottest line in the shock absorber business.

Write or wire today for particulars.



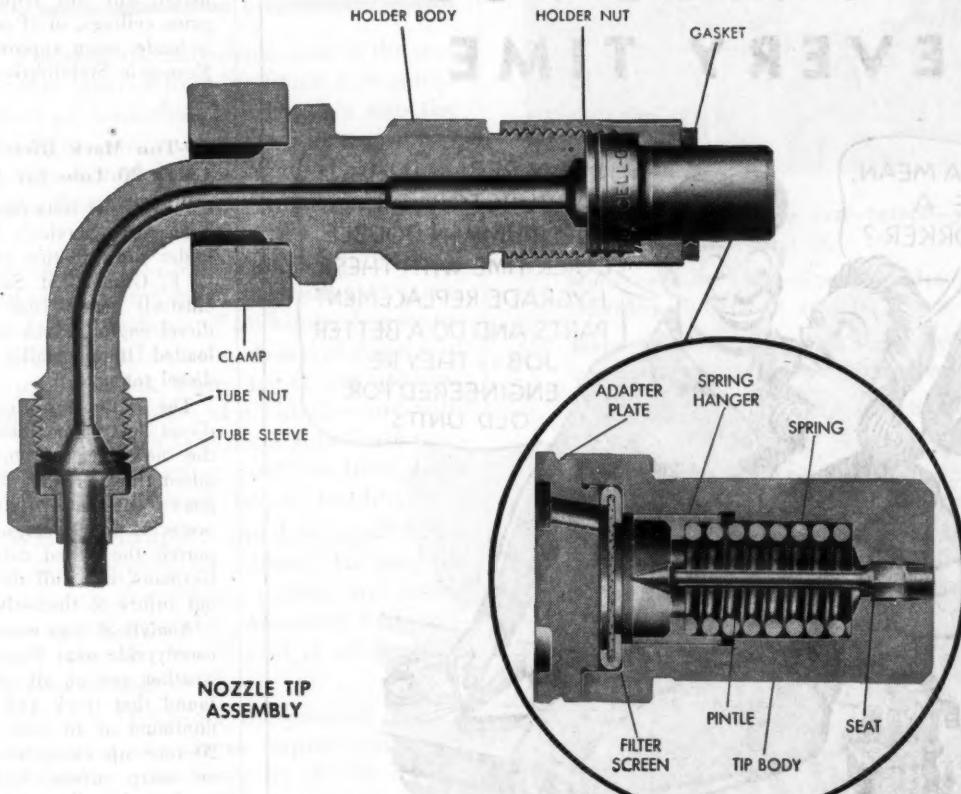
# "Inside Facts" About the EX-CELL-O Nozzle

THIS IS THE INJECTION  
NOZZLE FOR HIGH SPEED  
DIESEL ENGINES



THE CROSS-SECTIONAL view below shows the simplicity of the EX-CELL-O Nozzle Tip Assembly especially designed for high speed Diesel engines. Actually there are only three working parts—pintle, spring and spring hanger, and because these parts are relatively light, they are particularly responsive at high engine speeds.

Since all of the working parts of the nozzle are contained in a simple, replaceable unit assembly which is calibrated and sealed at the factory, the nozzle is easily serviced in the field without the need for special test equipment.



TWO TYPES of EX-CELL-O Fuel Injection Pumps are available for Diesel engines—Type KB with speed responsive timing and torque control for variable speed applications—Type KD for constant speed applications. EX-CELL-O pumps and nozzles can be supplied on engines through the engine manufacturers.

For further description of this injection equipment, write today.

*Fuel Injection Division*

**EX-CELL-O CORPORATION** ★ ★ **DETROIT 6, MICHIGAN**

**EX-CELL-O**

EX-CELL-O for PRECISION

## ODT - OPA - WPB NEWS

(CONTINUED FROM PAGE 132)

### Three Conservation Orders Revoked

Revocation of Conservation Orders M-216a and M-216b, covering the handling of motor vehicles stored and delivered under rationing, was announced recently by WPB. M-216a made it mandatory upon a producer, distributor or dealer to follow certain procedures before delivering a rationed vehicle to a consumer. M-216b prohibited the removal of equipment or parts from vehicles held for rationing. In addition the conversion of medium truck chassis parts for bus use was forbidden.

Also revoked is Conservation order M-311, covering the dismantling of used motor vehicles. It is considered no longer necessary with the pressure for scrap relieved.

### WLB Approves Six-cent Raise for Chicago Area Drivers

The National War Labor Board has affirmed a decision of its Trucking Commission which directed a general wage increase of eight cents an hour for approximately 10,000 drivers employed by three cartage and trucking associations in the Chicago area, but modified the Commission's order as to daily overtime.

The increase, six cents of which is in lieu of a reduction in the basic work week and other improvements in working conditions and two cents of which is allowable under the Little Steel formula, was directed with a provision that the wage rates as adjusted shall remain in effect through 1946. The increases will raise the wage rates for drivers of three- to five-ton trucks to 95 cents an hour, and the rate of drivers of five- to seven-ton trucks to \$1.00 an hour. The increase is retroactive to Jan. 1, expiration date of the previous contract.

The order involves three associations: The Cartage Exchange of Chicago, Inc., the Illinois Motor Truck Operators Assn., Inc., and the Central Motor Freight Assn., and two unions, the AFL Teamsters Union and the Chicago Truck Drivers Union, Independent.

The increases become effective only upon determination by the Office of Price Administration that the wage increases ordered will not require any changes in price ceilings, or if no such determination is made, upon approval of the Director of Economic Stabilization.

## A SWELL JOB EVERY TIME



### 10-Ton Mack Diesels Carry 20 Tons for Army

A series of tests conducted by the Motor Transport Service's Equipment Branch under the direction of Lieutenant Colonel L. F. Gordon, of San Benito, Tex., conclusively proved that the powerful, 10-ton, diesel engine, Mack truck can pull a fully loaded 10-ton trailer thus doubling the diesel tonnage lift.

The Transportation Corps' 672-truck diesel fleet immediately placed into effect the new measure that is revolutionizing motor transport cargo hauling on the European continent. It was found that the powerful Mack cargo trucks, which supported the Allied drive into the heart of Germany, can pull the added weight without injury to themselves.

Analytical tests were made in the French countryside near Paris under all kinds of weather and on all types of roads. It was found that truck and trailer could pull a minimum of 16 tons and a maximum of 20 tons up exceptionally steep hills and on sharp curves. Airbrakes on both the truck and trailer give the driver complete control of the vehicle at all time on dry and wet roads. Although the trucks are particularly adapted for German Autobahns (Super Highways), they can travel, loaded with 20 tons, on dirt roads and soft ground without fear of being caught in the mud. Lt. Col. Gordon stated that the present diesel drivers could handle the equipment with little or no new training.



Elliott G. Ewell has been appointed vice president and manager of the Southern Division of Mack-International Motor Truck Corp.

# YOU CAN GET 259 LINE DUCO

REG. U. S. PAT. OFF.

## A time-proven product for Truck and Bus Refinishing

Still no DULUX. For phthalic anhydride, one of the major ingredients of this superior long-life finish, is required in the manufacture of smokeless powder. It's also the basis of Dimethyl Phthalate, an insect repellent that has won praise from our Armed Forces for its effectiveness against flies, gnats, fleas, and chiggers on battle fronts across the world.

In the absence of DULUX, we recommend 259 Line DUCO, a finish of outstanding merit that will give excellent finishing results on surfaces of all kinds. For many years, 259 Line DUCO has been the choice of American railroads in painting coaches. Years ago it was used extensively on commercial vehicles of all kinds—and with marked success. 259 Line DUCO is not a substitute wartime finish. Its superior wearing qualities have been proved in years of testing under all climatic conditions.

259 Line DUCO is easy to apply, and dries rapidly to a high initial gloss that requires no rubbing. Its long life and stubborn resistance to cracking, peeling and fading have cut the frequency of repainting necessary with ordinary lacquers and enamels. You'll find it adequate in every respect for your present needs.

Plan to use 259 Line DUCO for the present. DULUX will be back just as soon as wartime requirements have been met. E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Refinish Sales, Wilmington 98, Del.

FIGHT TO THE FINISH—WITH WAR BONDS

## DU PONT REFINISHING MATERIALS

Better Things for Better Living  
... through Chemistry



MAKING BALL BEARINGS

# Preventive maintenance

## begins on a GLOBE HOIST



Today—more so than ever before—your fleet of vehicles must be kept fit.

More revenue miles—more service is expected, regardless of age of vehicle.

More frequent inspection—unit overhaul is required to preserve your critical wearing parts.

The biggest percentage of such work calls for access to the underside of the vehicle.

Manpower is scarce—so employ the GLOBE Universal Truck Hoist to save time—and enjoy accessibility quickly and with safety.

### GLOBE HOIST COMPANY

Des Moines 6, Iowa  
Philadelphia 18, Penna.



Used as a Front End Lift

Single post used for  
short-wheelbase Trucks  
or Automobiles

Globe Universal  
Truck Hoists—  
Wheel Dolly and  
Portable Pit Lifts  
—are available on  
W.P.B. limitation  
order L-270 to es-  
sential fleet op-  
erators.

**GLOBE**  
*Universal*  
**TRUCK HOIST**  
HANDLES ALL WEIGHTS  
AND WHEELBASES

## MAKING BALL BEARINGS

(CONTINUED FROM PAGE 90)

length of time. That's called stress annealing and normalizing.

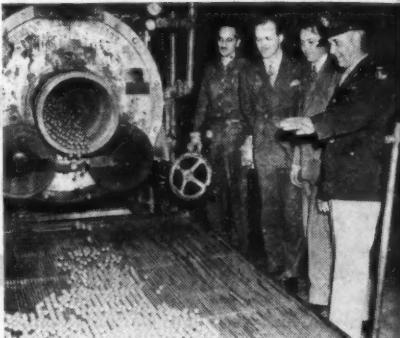
NOW we come to the steps that make the ball round and smooth and polished and right up to size. First is the "flashing" or rough grinding. Here the balls are run between grinding wheels to remove the "flash" or parting line around the middle; this also takes off any large imperfec-

tions. During this operation each of the balls is thoroughly moved around so that every part of the surface is between the grinding wheels at one time or another. Then the balls go to a battery of semi-finish grinders which carry the smoothing process further. At this point the balls come out approximately to size.

Then follows finish-sizing. The smaller balls are brought down to size and surface finish on "soft" lapping machines—which do not take off much stock. On larger sizes this

has to be done on grinders. When they come out, the balls are correct in size and of the finest polish.

But they are still soft and not yet ready to put into a bearing. So they go to the heat treat where they are first hardened, then stress relieved by tempering in another type of furnace.



Hotter than Tojo's Heaven are these steel balls as they roll out of a 3500 deg. oven. One process in manufacture

## Bear in mind...



Your drivers operate with confidence after you reline with Grizzly high quality brake lining. Grizzly delivers the maximum in\* Safety Quotient for quick stops, long life. Grizzly Manufacturing Company, Paulding, Ohio.

### THESE GRIZZLY FEATURES

#### MEAN HIGHER S.Q.

- Exclusive asbestos-friction compound, molded on wire-grid back.
- Constant high coefficient of friction throughout longer life.
- Astonishing freedom from adjustment.
- Precision machined for quick installation.
- Quick stops . . . but smooth . . . and with softer pedal.
- Most efficient braking performance under all conditions of service.



# GRIZZLY

REG. U. S. PAT. OFF.

# BRAKE LINING

**The only thing  
we want from  
a tire is  
mileage**



FRANK B. CARBONE, Vice Pres.  
Colonial Sand & Stone Co., Inc.,  
New York, N. Y.

• "Our operations call for heavy duty truck work; hauling tons of building material in and out of excavations and construction projects is a job requiring tires that are plenty tough. We have used Armstrong Tires since 1937 and found that they give us the only thing we want from a tire — mileage! And more mileage means lower tire cost to us."



**S**INCE 1912 hundreds of commercial car operators have learned that *you can't buy a better tire than an Armstrong!* For years, we have pioneered in making tires that wear longer and cost less. You can count on an Armstrong to give you a tire that will perform better, last longer, stand up under all conditions and cost you less per mile of use! That's not a statement—it's a promise, a promise backed by the thirty-year integrity of the manufacturer.

*For literature or information write your Armstrong distributor or to Armstrong Rubber Company.*

**ARMSTRONG TIRES**

Manufacturers of Quality Tires and Tubes Since 1912 • General Offices and Plant—400 Elm Street, West Haven 16, Conn.

## WHEN PURCHASING PARTS, TAKE TIME

(CONTINUED FROM PAGE 76)

the model A.X. truck which was made over a period of four or five years and which used three different types of rear axle assemblies; two semi-floating and one full-floating. The customer who ordered a "right rear axle shaft for a model A.X." still left the parts man the job of finding out which of three shafts was the one

wanted. If the customer was at the counter and could answer questions as to serial number or details of construction, this usually was not too difficult. But if the order came by mail, or telephone, much valuable time was sure to be lost. Frequently the wrong parts were sent, only to be returned later at further delay and handling expense.

I learned many years ago that ordering parts by catalog name and number was much the best way to insure getting exactly what I wanted.

But not until my friend, the parts clerk, told me his side of the story did I realize how much it helped him, or how few parts buyers followed the same method.

THE fleet of trucks which I repaired was pretty well standardized in a make whose manufacturer had provided me with a fairly simple and orderly parts catalog with each truck, but the catalog came in a box with the tool kit. How much better it would have been had the truck salesman taken twenty minutes of my time explaining the general features of the catalog and the advantages of ordering from it. He could have pointed out to me that some of my Model A.X.'s had rear axles model X.Y.Z. and others had model P.D.Q. and S.O.S. axles; how to tell them apart and how to find the parts listed in the catalog.

No salesman gave me such a helpful start so I learned the hard way. My employer paid for the time I spent studying the catalogs, and the truck dealer received half of the benefits.

NOW to mention a parts-buying incident of the other kind. One truck in our fleet was built by a manufacturer whose parts-listing system has long been in need of a general revision, to put it mildly.

About 8 o'clock one night this truck twisted off the rear propeller shaft over 100 miles from home. Armed with the usual data as to model, serial number, wheelbase, etc. (I had no parts catalog on this truck) I went to buy a new shaft in order to make a quick roadside repair.

The parts clerk brought me a shaft which I knew was wrong because it had an M— universal joint while the disabled truck had S— joints. He studied the parts catalog carefully, but could find no shafts listed for that model with S— joints. So I telephoned the garage where the driver of the disabled truck was waiting and had them take measurements as best they could of the old shaft. We hunted through the stock of propeller shafts and found one that seemed to be about right, so I took it and started out.

I arrived at the disabled truck about 2 a.m., quickly removed the broken shaft and started to install the

(TURN TO PAGE 142, PLEASE)

**Road Proved**  
BY MEN WHO USE THEM!

*The DAVIDSON*  
ESTABLISHED 1904

BROADWAY 7-900

TRANSFER & STORAGE CO.  
6201 PHILADELPHIA ROAD BALTIMORE 3, MD.

March 23, 1946

American Safety Tank Co.,  
2814 Mercier,  
Kansas City, Mo.

Gentlemen:

In 1938 we placed our original order for American Safety Tanks, and since then have standardized on this device for all of our power units, having purchased and used over three hundred.

About five months ago one of our tractors caught fire from a burned out muffler. The flames enveloped the gas tank, heating the contents, which caused the fuse plugs to blow out, thereby eliminating an explosion, and confining the fire to such an extent that the blaze was quickly extinguished.

The equipment, and its valuable cargo of Government freight, was saved.

Over the entire period of our experience with these tanks, we have never had to discard one due to damage by collision. Even though some were dented rather severely, we still were able to use them.

We enjoy the use of these tanks. In addition to our remarkable safety experience, and based on performance, protection, and low cost, they will continue to be our standard.

Very truly yours,

THE DAVIDSON TRANSFER & STORAGE CO.

S. D. DAVIDSON  
Vice President.

**American Safety Tank Co.**

UNDERWRITERS LABORATORIES, INC., A. U., 1302  
U. S. PAT. NOS. 2090197 & 2268697  
KANSAS CITY 8, MISSOURI, U. S. A.



## developed maintenance magic for YOU!

### The Famous Veedol P. M. Plan is waiting for you, too!

The Veedol Preventive Maintenance Plan is doing a whale of a job for over 800 hard-working fleets. It can help yours. The plan can be tailored to fit any number of units—and

costs only 18¢ per truck. Write today for a Tide Water representative to call and go over this *proven* lifeguard for rolling equipment. You can't get started any too soon!



TIDE WATER  
ASSOCIATED  
OIL COMPANY  
New York 4,  
17 Battery Place.  
Tulsa 2,  
Thompson Bldg.

BUY WAR BONDS AND STAMPS

Here it is...  
NEW, SURE WAY  
to Find LEAKS in  
Tubes! . . .



**BISHMAN TUBE DUNKER**  
NO. 820—AIR-POWERED—ROTATING

Here's what you've wanted for a long time—an EASY, QUICK and SURE way to locate ALL leaks in ALL tubes up to 50" diam., including SYNTHETIC tubes. It will avoid missing leaks—will save time, labor and critical tire mileage.

It submerges an inflated tube COMPLETELY, in a few seconds, holds it steady under water in a level horizontal position, fully visible, with equal air pressure throughout the tube—no bulges! Tube easily rotated in the water for close inspection of any part. Handy built-in light. No need to keep hands in water. Two front submerging arms are moveable to permit inserting or removing tube.

**AIR-POWER Cylinder** operated from your regular air supply. With minimum amount of air, it develops pushing power to submerge a big tube. One lever operation—move to right to lower submerging arms, move to center to stop arms at desired point, move to left to raise arms.

**Quickly attached** with 3 bolts to any tank from 40" to 52" diameter—adjustable frame and arms. Clamps fit rolled or angle rims on tank. Three point suspension, heavy channel iron frame, tank hold down device—tank held steady at all times.

**Pays for itself** in time and labor saved, in avoiding duplication of work and tube damage.

**ASK YOUR JOBBER or WRITE FOR DETAILS**

**BISHMAN MFG. CO., 1101 SOUTH 2ND ST., MINNEAPOLIS 15, MINN.**

**WHEN PURCHASING  
PARTS, TAKE TIME**

(CONTINUED FROM PAGE 138)

new one. No luck. It was an inch or so too long. There was nothing I could do but wait until morning and spend most of the next day having the broken shaft repaired in a machine shop several miles away. So, my employer paid a high price in labor and lost time for a repaired shaft, and the truck manufacturer's branch lost the sale of a new shaft.

Although the truck in question was a well known make, sold strictly on a quality basis and priced accordingly, a series of such unsatisfactory incidents have left us with no desire to own any more of them.

FROM such experiences I have formed the following opinions:

1. Some truck manufacturers have prepared very good parts catalogs, but fail to get full benefits from them because they make no effort to teach buyers to use them.

2. Some truck manufacturers have parts lists that are hopelessly chaotic, and even parts men with long experience at the counter can't tell from them what parts fit what trucks. These manufacturers and their dealers are losing business.

3. Truckmen pay a heavy price for owning a truck when the only way they can be sure of getting the right part for it is to lay the old part on the counter and ask for a new one like it.

4. Parts buyers in general, maintenance foremen in particular, would find buying much smoother and would know their vehicles better if they studied and used good parts catalogs when they are available.

On the subject of service instruction manuals I'd like to make only a couple of general remarks.

First, except for such data as tappet settings, wheel alignment, lubrication recommendations, etc., very few of them that I have seen are of practical value to the experienced mechanics who do complete maintenance, including major overhauls. Too many of them carry their instructions through the elementary stages of repairs and adjustments, and conclude with the advice to take the vehicle to a repair shop for major repairs.

(TURN TO PAGE 144, PLEASE)

# Yes! R301\* will make a big Difference!



THANKS TO R301, tomorrow's cross-country truck operator will enjoy *increased profits per trip*. For the use of R301 and the other new Reynolds light-weight, high-strength aluminum alloys mean less *dead-load* . . . *more pay-load*. Short haul operators, too, will benefit. They will carry present loads with lighter, more economical trucks, thereby saving on gas, tires and oil. In addition, there will be many maintenance economies.

Write for information . . . Reynolds engineers will be glad to work with you. Reynolds Metals Company, Aluminum Div., 2533 South Third St., Louisville 1, Kentucky.

Keep your dollars fighting . . . Buy More War Bonds!

\* R301, and the other great new Reynolds aluminum alloys cover the entire field of automotive requirements . . . provide full scope for the designer and engineer. See Special Bulletin 50-A, giving complete data on R301. Reynolds facilities—42 plants in 15 states—include complete fabrication—finished parts ready for assembly.



## REYNOLDS

The Great New  
Source of **ALUMINUM**

INGOT • SHEET • SHAPES • WIRE • ROD • BAR • TUBING • PARTS • FORGINGS • CASTINGS • FOIL • POWDER

## WHEN PURCHASING PARTS, TAKE TIME

(CONTINUED FROM PAGE 142)

Second, it would be fine if some manufacturer would try to prepare detailed instructions for some repair operations on the trucks he builds. Perhaps when he finds that it takes four pages to describe the operation of removing a radiator he will decide it's time to redesign its mounting.

END

(Please resume your reading on P. 78)

## Army Unit in India Recaps 5000 Tires Monthly

Many of the trucks that twist their way up the Stilwell Road delivering supplies to forward areas are running on retreaded tires these days, and the retreading job is not being done in the United States. New treads are being put on in India at an SOS base in Assam, where a GI Tire Repair Co. is hard at work taking in torn and worn out tires and tubes and turning

them out as good as, and sometimes better than, new.

Stack upon stack of old, beaten tires from jeeps, weapons carriers, command cars, and six-by-sixes are piled outside the crude basha workshops of this tire outfit awaiting their turn to have a hole patched up or to have a complete retread job. When a tire no longer is serviceable, it is not relegated to the scrap heap. It is loaded on a truck or railway car and sent to the tire repair outfit, and within a few weeks it is back on some other vehicle on the road, delivering supplies where they are most needed.

Captain Sidney S. Groom, of Bristow, Okla., commanding officer of the tire repair unit, has organized his men on a production line basis. His two shops work on three 8-hour shifts daily, and each man has his daily quota of tires to turn out.

Hot molds which bake the tires raise the temperature in the shops to an almost unbearable level, but the GI's who are working on the production line keep at their jobs, stripped to the waist, turning out repair jobs and retreads as fast as any factory of similar size back in the states.

The first step in the repair process is to put the tire on the spreader, a simple gadget that distends it to enable an inspector to look it over and determine the extent of the damage and the nature of the repairs needed. If the tire is too far gone, it is turned over to the salvage pile. But this is the smallest pile in the plant, since less than 15 per cent of the tires which come in are discarded in this manner. If there is anything to work with at all, the tire repair unit turns it back out on the road.

After the inspector has determined just what has to be done, the tire moves on down the production line. Usually he indicates that it needs a section repair job, patching up a large hole, or a complete retread job.

(TURN TO PAGE 146, PLEASE)



MARVEL MYSTERY OIL goes to work many ways to help you keep today's overworked trucks ready and able to hit the road. First, it halts excessive engine wear and protects valve stems and guides with reinforced lubrication. In high heat engine combustion areas, where ordinary lubricants break down, MARVEL MYSTERY OIL stands up and sustains its remarkable lubricating efficiency. Second, when added to lubricating oil, it allows rings and sticky valves to function smoothly . . . oil lines and pump screens benefit by its great gum solvent ability. Added to your fuel tanks, it improves the performance of today's low octane gas and prevents accumulation of power killing fuel residues and gums.

No wonder MARVEL MYSTERY OIL is in wide demand among thousands of maintenance-wise truck and bus operators . . . it is one answer to maximum motor efficiency and continued operation today. Ask us for the whole motor conservation story now. It will help to keep your pay-load units rolling and save repair parts and lay-up time for overhauls. THE EMEROL MANUFACTURING CO., Inc., 242 West 69th Street, New York 23, N. Y.



An example of the trailer service Fruehauf factory branches are equipped to render is this new van built for the Wm. Brenner Furniture Corp. by the Fruehauf branch in Cincinnati. The branch service station started with a 26-ft. narrow frame chassis, stretched it to 30 ft. and then built the body. All work was done within the company's own shop. During the war emergency many trailer owners operating in states where vehicle length laws have been liberalized have availed themselves of this service to increase length and carrying capacity.



# MOTOR SPECIALTIES

Empire Electric Brake Company  
Newark 7, New Jersey

Gentlemen:

We have  
acknowledging our  
order or  
order Vactr

1929

*Says J. F. Johnston . . .* "excellent service—  
heavily laden trucks—severe mountains"

*"The Vacdraulic units we have placed in service are installed on trucks carrying coal from an open cut mine, high in the Southern Alps of South Island, to the sea - locally known as the 'Burma Road.'*

*"The fact these Vacdraulics are giving excellent service in this severe mountainous country on heavily laden trucks is very pleasing."*

Vacdralic is a rugged, self-contained unit, attached at a convenient point in the hydraulic brake line. It utilizes the vacuum produced by the motor to multiply the power and stopping energy exerted on the brake drums. It gives any good hydraulic brake that important factor of safe, split-second stopability.

With feather-touch, instant, eye-to-pedal-to-brake action, Vacuumatic gives you that extra margin of safety essential to driving in congested traffic or over high speed highways.

# VACDRAULIC

## THE BRAKE POWER BOOSTER

**KELSEY - HAYES WHEEL CO., DETROIT, MICH.**

**Sold to Automotive Distributors by**

**EMPIRE ELECTRIC BRAKE CO., Newark 7, N. J.**

VACRAULIC is a Trade Mark of Empire Electric Brake Company



**VACDRAULIC**  
**MODEL 50**



**VACDRAULIC  
MODEL 100  
Medium  
Trucks.**



**VACDRAULIC  
MODEL 240  
Medium Heavy  
Trucks**

## ARMY UNIT RECAPS 5000 TIRES MONTHLY

(CONTINUED FROM PAGE 144)

Tires marked for retreading are sent into the buffing shop where a soldier operates a heavy mechanical rasp or "buffer." The ragged edges of the tire are shredded off by this machine, and when it emerges from the operation it presents a uniformly smooth surface to which the retreading material can be attached.

The next operation is the application of the "camel-back," a rubber strip which constitutes the new surface of the tire.

Coming in strips just wide enough to cover the tire as far as the sidewalls, the "camel-back" is first made to adhere to the tire by the use of rubber cement. The strip is put around the entire circumference of the tire and carefully massaged down by hand rollers until it is firmly attached all the way around.

On down the production line, the tire now goes into the mold, which is the final operation in the retreading process. In the mold it is heated to a temperature of 290 deg. Fahr. under pressure. Time in the mold depends on the size of the tire. After two or three hours the retreads are taken from the molds, and when they have

cooled, they are as good as new and ready to be shipped out.

The retread job makes a synthetic tire better than new. Rubber grown in southern India is used for the retreading, and it is every bit as good as the rubber which used to be obtained from plantations in the Dutch East Indies. Local rubber firms manufacture the various products which are needed, the "camel-back," the cord material, and other essentials of tire making.

An average of 4000 to 5000 tires a month are retreaded and repairs are made on tires which would normally be good only for the salvage pile. Thousands of miles of service are obtained from these tires which ordinarily would be classed as beyond repair.

### Army Transport in Europe Stresses Maintenance

Heavy requirements for Motor Transport Service operations in the European Theater during the past 10 months have urged an exacting program of first and second echelon maintenance to keep truck equipment rolling.

Training programs have been instituted to acquaint personnel with the correct maintenance procedure for each vehicle. Bulletins are issued to all units giving up-to-date instructions and orders on the proper care of vehicles.

Company service lines are set up by each unit where first echelon maintenance and 1000-mile services are taken care of by experienced mechanics. Second echelon maintenance is performed in shops constructed in company areas with eight vehicles being serviced at a time. Vehicles requiring 3rd or 4th echelon maintenance are immediately evacuated to Ordnance units for repairs or replacement.

While on the roads each driver is responsible for the efficient function of his equipment. At every halt windshields are cleaned; lights, tires and loads are checked; excess mud is removed, and trailer hitchings are inspected. At the completion of runs, drivers turn in a small report sheet on the condition of their trucks which is checked by the motor officer.

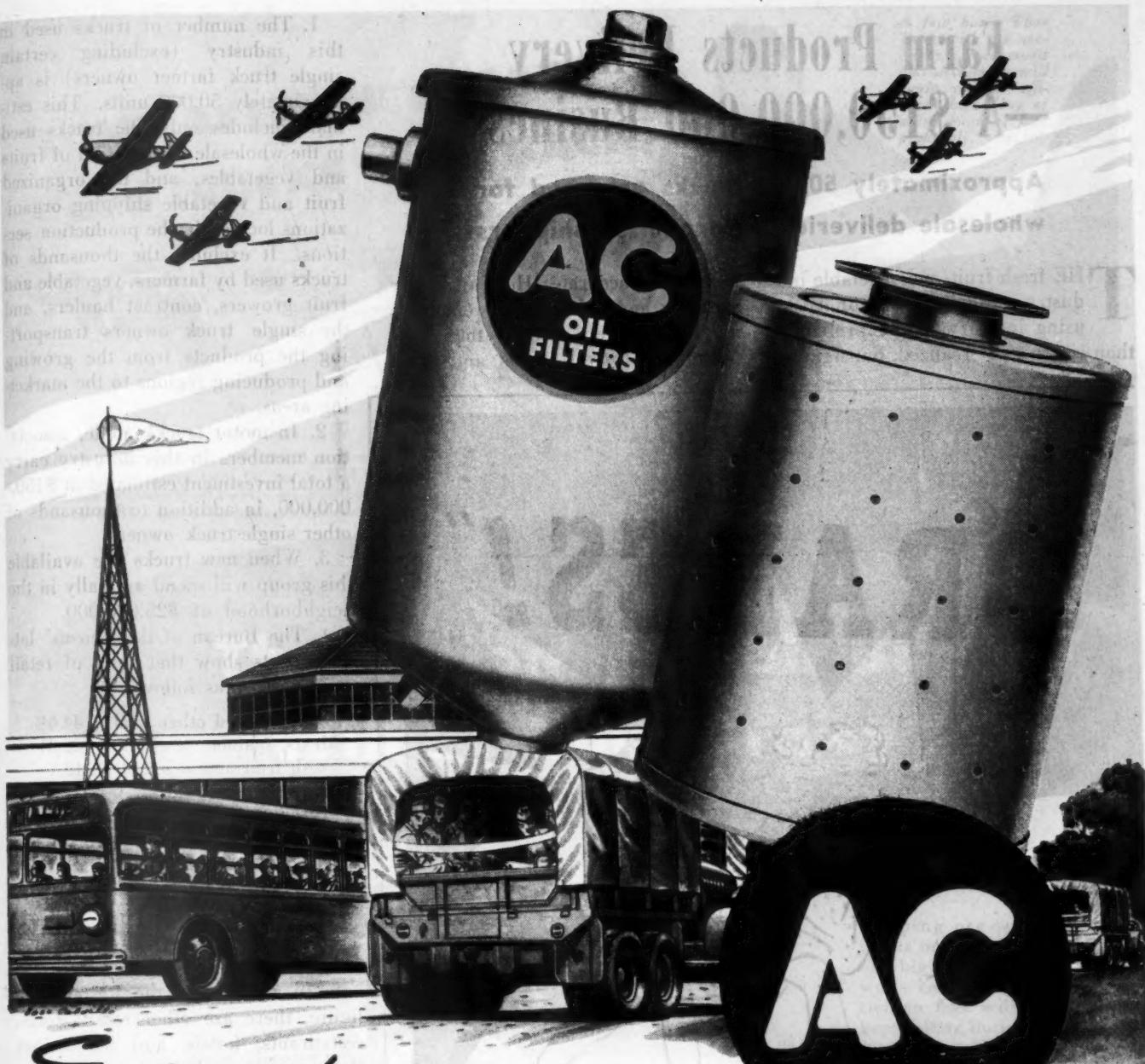
An example of a good trucking company setup for preventive maintenance is that of the 4262nd QM Truck Company (TC) which has never had less than 40 trucks on the road at one time. No more than three trucks are ever in Ordnance shops at one time, and vehicles are in operation 15 to 20 hours a day.

A "Super Duper" company service station has been set up through which every truck is run once a week. This service includes washing, greasing and checking the vehicle in its entirety. The driver checks the tires while three other men go over the entire truck for lubrication. The storage battery is checked; each gear case plug removed; universal joints inspected for wear after and while being greased; steering linkage checked for wear and movement; wheels, brakes, instruments, horn, generator and radiator checked; engine oil changed when needed.

Upon consulting the Eberhard Catalog for fittings of a special nature one generally finds his needs met in an ideal way. Consider for example this array of fittings for utility bodies. Years of pioneering and specialization has produced equipment that assures smooth operation and long service on every type of body.

EBERHARD Long Run  
TRUCK BODY FITTINGS

EBERHARD MANUFACTURING CO.  
Division of the Eastern Malleable Iron Company • CLEVELAND, OHIO



## Engineered FOR HAULING

Engines of all crankcase capacities up to 30 quarts can be provided with maximum oil protection with one of the AC Lubricating Oil Filters engineered for truck and coach service.

One of the best indications of how well these filters and elements have been engineered for heavy haulage is the fact that military models of them are in use by the armed forces on motorized equipment in war service.

To better protect your engines against loss of power, waste of oil and fuel, and too-frequent overhaul, consult the AC Field Service Representative for his recommendations as to the best type of filter equipment for your vehicles.

**BUY MORE THAN EVER IN THE 7TH WAR BOND DRIVE**

AC  
OIL  
FILTERS

**SEND FOR AC SHOP MANUALS**

Field Service Dept., AC Spark Plug Division, General Motors Corp.  
910 Mott Foundation Building, Flint 3, Michigan

**Gentlemen: Please send at once, no charge, the AC Shop Manuals checked:**

<input type="checkbox"/> How to Service Spark Plugs	<input type="checkbox"/> How to Service Fuel Pumps
<input type="checkbox"/> How to Service Spark Plug Cleaner	<input type="checkbox"/> How to Service Air Cleaners
<input type="checkbox"/> HOW TO SERVICE OIL FILTERS	<input type="checkbox"/> How to Service Speedometers
<input type="checkbox"/> How to Service Ammeters and other Instruments	

CCJ-6

NAME \_\_\_\_\_

FIRM \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

# Farm Products Delivery —A \$150,000,000 Business

Approximately 50,000 trucks are used for wholesale deliveries by organized shippers

THE fresh fruit and vegetable industry represents a major truck using industry, larger probably than is generally realized, but figures

are not too accurate. Here are a few statistics and information related to motor trucks engaged in the transportation of fresh fruits and vegetables.

1. The number of trucks used in this industry (excluding certain single truck farmer owners) is approximately 50,000 units. This estimate includes only the trucks used in the wholesale distribution of fruits and vegetables, and the organized fruit and vegetable shipping organizations located in the production sections. It excludes the thousands of trucks used by farmers, vegetable and fruit growers, contract haulers, and the single truck owners transporting the products from the growing and producing regions to the marketing areas.

2. In motor trucks alone, association members in this industry carry a total investment estimated at \$150,000,000, in addition to thousands of other single truck owners.

3. When new trucks are available this group will spend annually in the neighborhood of \$25,000,000.

4. The Bureau of the Census' latest reports show that sales of retail groceries are as follows:

Groceries and other food...	44.6%
Meats, seafood, poultry...	22.3
Fresh fruit and vegetables.	12.1
Milk, eggs and dairy products	8.9
Bread, baked goods...	5.7
Beer and wine...	1.0
Liquors packaged	.4
Other sales	5.0
	100.0%

5. In addition to the 12 per cent figure, there are other retail stores, restaurants, hotels, and institutions that receive wholesale deliveries. Practically all these deliveries are made by truck. This field alone represents a large truck operation.

6. The annual shipment of fresh fruit and vegetables prewar aggregate 1,000,000 to 1,250,000 carloads equivalent annually. Before the war, motor trucks handled approximately 42 per cent of the total equivalent of carloads shipped.

7. Members of the National League own and operate approximately 75 per cent of the trucks in wholesale distribution service.

8. In the short haul trucking operations, probably 50 per cent to 55 per cent of the trucks operated in this field are owned by Shipper Members.

9. There are definite advantages in the shipping of fruit and vegetables.

(TURN TO PAGE 150, PLEASE)



**LONG AFTER NEW CARS  
and TRUCKS COME BACK,**

*A few basic Thor Tools with the necessary attachments and accessories will equip you for efficient handling of many kinds of jobs, profitably.*



## ELECTRIC DRILLS

**LIGHT AND HEAVY DUTY DRILLS** In a complete range of capacities from  $\frac{1}{4}$ " up to  $1\frac{1}{4}$ " for continuous or intermittent service are available in the complete Thor line of portable electric tools.

# The Nation's Repair Bill Will Be Your Gravy

100

*Thor*

# PORTABLE *Electric & Pneumatic* TOOLS

**6", 7" AND 10" BENCH GRINDERS**  
in light or heavy duty types are a  
shop necessity.



Keeping pre-war cars and trucks on the road is going to be a big paying business. At the war's end the nation's entire civilian fleet will have to be kept rolling during the time of catching up lost production.

## Prepare to Repair—Tool Up to Make It Pay

Even before you can get delivery on the tools you'll need, make your plans. Check into the many ways Thor Tools take the grief out of tough, time-wasting jobs—yes, and put in a sweet profit for the shop as well. Be thinking and you'll be ready.

The Thor Line of portable electric tools is complete—and completely at home in the automotive service shop. Every tool in its wide range of types and sizes was engineered in the first place to do the work better . . . has been job-tested in every major manufacturing plant as well as every type of automotive service shop.

*Get the facts and make up your mind now to face the postwar profit opportunities with the right tools—Thor Tools.*

**INDEPENDENT PNEUMATIC TOOL COMPANY**  
600 W. Jackson Blvd., Chicago 6, Illinois  
New York Los Angeles

## WITH THE TOOLS THAT BUILT THEM

### AN AIR TOOL FOR EVERY JOB

**Harness the MAGIC power of AIR with Thor  
MULTI-MATIC AIR TOOLS for shop service.  
Run tools from compressor as small as  
3 H.P. Line includes Drills, Grinders, Pol-  
ishers and Sanders . . . 7 complete tools**



# Everybody is talking about it

"I get a lot MORE MILEAGE since I've been using NU-POWER," says a salesman.

"My car runs so much SMOOTHER," writes a war-worker.

"NU-POWER gives me FAST DEPENDABLE STARTING," says a doctor.

"NU-POWER gives me the POWER I need to pull loads through mud and sand" . . . comes from a farmer.

"I've gotten new customers and INCREASED MY PROFITS," says a service station operator.

"WE HAVE SOLD ONE AND A HALF MILLION BOTTLES OF NU-POWER," writes a prominent jobber.

Yes, hundreds of thousands of motorists and service station men in the United States and Canada are praising NU-POWER because it gives motors More MILEAGE, More PEP and More POWER and PRODUCES SMOOTH AND MORE ECONOMICAL OPERATION.

NU-POWER service has been proven by usage.

For Better Wartime Service

Get

# "Nu-Power"



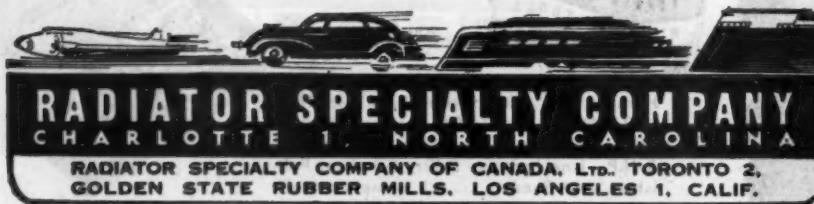
Just pour into the Gasoline Tank  
IT MIXES ITSELF

NU-POWER is a Solder Seal Product  
made and guaranteed by the makers of

• LIQUID WRENCH • TITE SEAL

Gasket and Joint Sealing Compound • ANTI RUST • SUPER  
SOLVENT • RADIATOR REPAIR • BLOCK SEAL •  
IGNITION SEAL.

SOLD ONLY THROUGH THE TRADE



## FARM PRODUCTS DELIVERY

(CONTINUED FROM PAGE 148)

tables by truck. Here is one view on advantages, reported by the Farm Credit Administration based on a survey of shippers and growers:

- a. More prompt delivery
- b. More convenient
- c. Less handling
- d. Cheaper
- e. Reaches market in better condition
- f. Less loss in transit
- g. Lower packaging cost.

10. In the short haul transportation of fruits and vegetables, distances under 300 miles, truck transportation will be found almost always lower in cost than rail transportation if the proper type and size equipment is used.

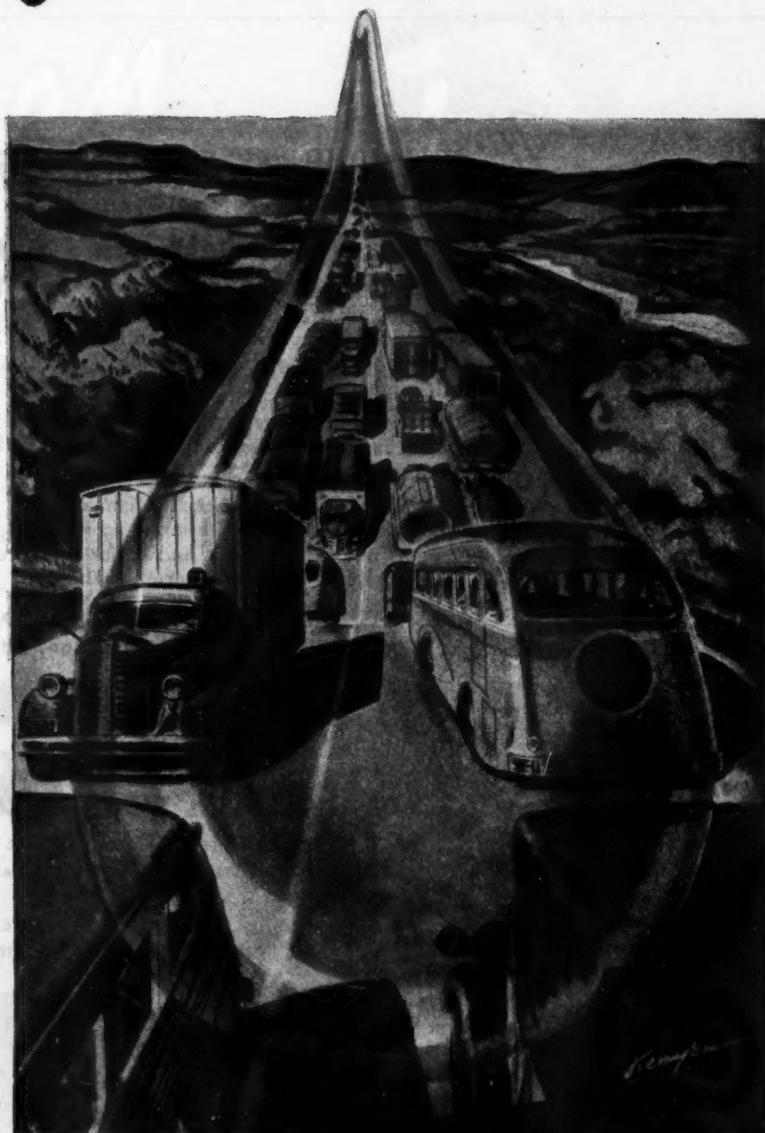
11. In the long haul operations, operating at distances that reach the market the second day or later, distances that fruits and vegetables can be shipped by truck economically in competition with the railroad, depend upon many factors. The greatest limiting factor in your industry is the state road laws, principally those weight limitations imposed in the southern growing areas.

Investments and volume on the scale indicated impose heavy responsibilities and call for a high order of administrative ability. I believe that I am making a constructive suggestion when I urge that the men who are charged with the responsibility for motor truck transportation and maintenance have a reasonable voice in policy-making with regard to this important phase of individual company businesses.

Now is the time to appraise company policy in this regard because, for some time after commercial truck production is resumed, the rate of investment in replacement trucks will undoubtedly be substantially above normal.

These suggestions are made with full knowledge of the responsibility for motor truck development and improvement in manufacture. Just as the last war was the cradle days of the first really practical motor trucks, this war has produced a number of important engineering developments and innovations. Some are improvements of universal application to all  
(TURN TO PAGE 152, PLEASE)

# For longer engine life . . . choose the motor oil with a stable detergent



FOR the abnormally heavy duty required of trucks, buses and tractors, today, motor oil must be better than good.

Quaker State HD Oil is that kind of oil!

Quaker State HD Oil stands up for an incredible time, even in over-aged, over-worked truck and bus engines. Keeps working surfaces running smoothly. Leaves no coky or gummy deposits that cause ring-sticking, plugging of oil holes, power loss, high oil-consumption.

Quaker State HD Oil contains a special detergent that keeps engines cleaner—prevents soot, fuel residues, road dust and dirt, which may accumulate in the oil, from sticking to engine surfaces and building up harmful deposits.

And, remember, this detergent is *stable*. Some detergents fail in motor-oil service. But the remarkable detergent used in Quaker State HD Oil not only works, but keeps on working.

Use Quaker State HD Oil—it will help you keep your trucks, buses and other valuable equipment on the job.



Quaker State HD Oil for your trucks, buses and tractors  
Quaker State Motor Oil for your passenger cars

Buy more than before—SUPPORT THE 7th WAR LOAN



QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA

## FARM PRODUCTS DELIVERY

(CONTINUED FROM PAGE 150)

types of truck service. Others are of special application to certain types of service. It will require the discernment of experienced, practical operating men to decide what of these innovations are of value in particular cases.

Here is a brief review of all important facts and trends affecting motor trucks post war:

1. Few industries during this war have escaped being plagued by artists' conceptions and Jules Verne accounts concerning how radically changed their products will be immediately after the war. I remember, for instance, reading about tasty dehydrated vegetables in small packages and even capsule size, that the public will clamor for in preference to the old-fashioned article.

2. But I don't believe it. And you, no doubt, have seen colored pictures and highly colored descriptions—of

the postwar motor trucks. Don't you believe them either. You have not seen the specifications for any such radically different postwar truck for the simple reason that none have been written.

3. In the first postwar years, trucks will show very little change in appearance. There are, however, some worthwhile mechanical improvements on the way.

4. Company engineers have learned how to develop more power per cubic inch of engine displacement. In military trucks this made possible vehicles with power enough to negotiate rough cross-country terrain without unduly heavy power plants, which would have made the additional weight of adequate armor impossible. In commercial terms, this high horsepower output per cubic inch of displacement means improved performance, naturally, and also much improved fuel economy.

5. Better braking facilities, to complement the increased power and increase the safety factor, are another by-product of military vehicle research which should come quickly.

6. Because of the fruit and vegetable industry's need for refrigerated and insulated bodies—both of which are heavier than ordinary types of bodies—there is a special interest in the considerably increased payloads which the use of lighter alloys, both in the chassis and the body, will make possible. Restricted payload has always been a major handicap in this industry—particularly in the case of refrigerated trucks—because of the small per-unit profit.

7. There will be improved refrigeration methods for truck and trailer, very probably including a refrigeration unit or compressor as part of the truck.

(TURN TO PAGE 154, PLEASE)

*This DIAMOND "I" on tubing tools*

• • • Means Faster and Better  
Gas, Oil, and Brake Line Work for You

Amazing how good tube working tools eliminate grief . . . enable you to turn out tubing connection jobs faster . . . help you get tight joints that stay tight.

That's why service men everywhere prefer Imperial tools for cutting, flaring and bending tubing on gas, oil, and brake line work.

Tools that carry the Imperial Diamond "I" make the most of precious man-hours . . . they help you get jobs out faster, better and easier. Be sure that your tools carry this emblem of quality.

THE IMPERIAL BRASS MFG. COMPANY  
1209 West Harrison Street, Chicago 7, Illinois

**IMPERIAL**

BRASS FITTINGS • FLEXIBLE FUEL LINES  
• TUBE WORKING TOOLS • BATTERY  
HYDROMETERS • FUEL  
STRAINERS • WELDING  
EQUIPMENT



They do things in a big way on the West Coast. Palo Alto Transfer & Storage Co., Palo Alto, Calif., have recently added two new 1350 cu.ft. Fruehauf semi-trailers. The firm will use a Fruehauf converter gear to operate the two vans together in a train, becoming one of the first in its field to adopt this method of operation. Use of the train will enable Palo Alto to carry two or three family loads per trip, saving gasoline and tires.

# Tough Brake Linings built to maintain tough schedules

*American*  
TRADE MARK REG. U.S. PAT. OFF.  
*Brakebloc*  
BRAKE LINING

AMERICAN BRAKEBLOC, DETROIT 9, MICH.

DIVISION OF

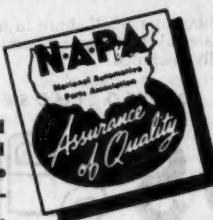
AMERICAN  
**Brake Shoe**  
COMPANY



Stopper says -

Don't let a tough braking problem ruin your record — send it to American Brakebloc's free advisory service.

38 strategically located NAPA warehouses and jobbers everywhere maintain stocks of American Brakebloc materials.



## 3 Types Safe-Stop Brake Linings

1 "REGULAR" for manually operated braking systems.

2 "1000 SERIES" for vacuum booster braking systems.

3 "2000 SERIES" and thick blocks for air-brake equipment.

## FARM PRODUCTS DELIVERY

(CONTINUED FROM PAGE 152)

8. There is no question but that there will be many other improvements as they prove themselves practicable and desirable in commercial use. Safety and operating economies will be furthered. Consumer demand, as usual will dictate the physical characteristics of the vehicles.

9. All trucks have had more miles

and years of service built into them than was ever got out; truck owners are never going back to pre-war standards of maintenance.

10. The lessons learned in this regard during the war may well prove to be the most important single truck development to come out of this period.

11. Conservation practices put into effect by White to meet the threat of a serious wartime breakdown in truck transportation will be continued in

full force after the war because experience has proved that there is good economic justification for better maintenance of trucks.

12. Even under most favorable maintenance, however, the necessary replacement of worn-out vehicles will be a dominant factor in demand in the early years after the war.

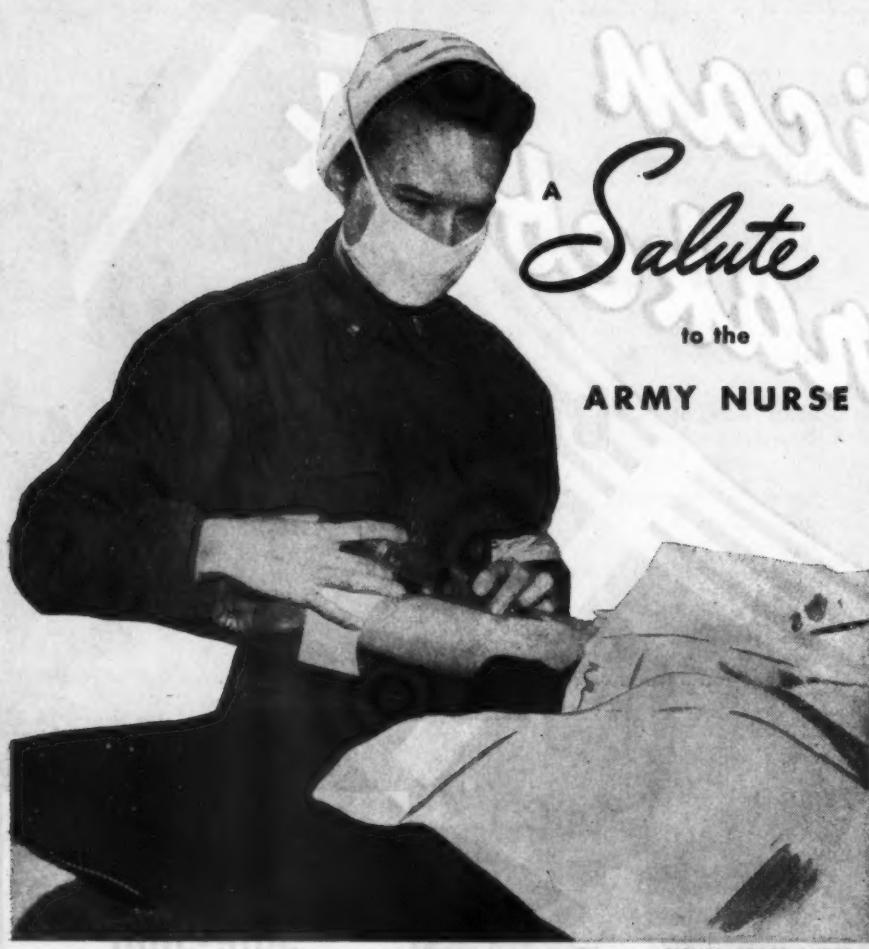
13. The motor truck industry indicates that truck production will total 600,000 vehicles in the first twelve months after cessation of hostilities with Germany provided restrictions are lifted. In each of the following two years the informed forecast is that 1,000,000 trucks will be produced.

14. Surplus military trucks are another factor in the picture. These vehicles are not likely to find their way into highway transportation service to any appreciable extent. It is impossible to see them as having application to fruit and vegetable distribution. They are more likely adaptable to highway construction, oil field operation, lumber, mining, and other miscellaneous off-the-highway projects. Most of them have been built to withstand the strain of cross-country military operations—a role incompatible with commercial standards of desirable vehicle weight, satisfactory fuel economy and good performance at governed engine speeds.

15. In the rehabilitation of the liberated countries, these wartime vehicles are expected to play a helpful role and many of them will be kept abroad for that purpose.

The increased use of motor transport service in the years after the war will depend on a great many unforeseeable factors. Much will depend on government attitude. If that attitude is to foster the development of the best there is in all the trans-

(TURN TO PAGE 157, PLEASE)



SIGNAL CORPS PHOTO

Field hospitals swell with casualties during an offensive. But the keen mind and the cool patience of the Army Nurse prevents any possible turmoil. Her courage and skill help make it possible for 97% of the wounded who reach her to recover.

Our fighting men have a healthy respect for the Army Nurse... a respect that will not perish... today... tomorrow... or a year from tomorrow. There is surely no finer contribution to the war effort than hers.

EDWARDS IRON WORKS, INC., SOUTH BEND, INDIANA

★ Edwards is making a sincere effort to contribute its small share in helping these troops... and all of the United Nations... with the material they require. Semi-trailers for combat use are, naturally, included.

BUY WAR BONDS AND HOLD ON TO THOSE YOU HAVE

# EDWARDS



## STANDARD & SPECIAL TRUCKS ANY SIZE OR TYPE



AVAILABLE TRUCK COMPANY  
2501 Elston Ave., Chicago 47, Illinois

FARM PRODUCTS  
DELIVERY

(CONTINUED FROM PAGE 154)

portation agencies we have—with the competitive incentive as the pace-setter—motor transport use can be expected to develop more rapidly than before the war.

It is characteristic of the motor truck that new developments grow out of the needs of its users. Not for long is the truck user forced to adapt his need to the vehicle; but rather, the vehicle is adapted to his need. This extreme flexibility, inherent in the motor truck is the principal reason for its necessity to so many types of business. There is no question but that truck transportation will increase post war, but this development will not come overnight.

Another phase of motor truck transportation is the mechanic, and the driver. From what source shall they be recruited?

Why, the men behind the wheel of military trucks, and the men repairing them, will return with new ideas on operation, driving, and maintenance, which will stimulate further improvements in motor transport.

Jobs for returning service men after the war will be found with operators and in the trucking industry. Many of these veterans left for the war with little or no technical training, but will return highly trained in the operation and maintenance of motor vehicles. These men will serve well in motor truck transportation.

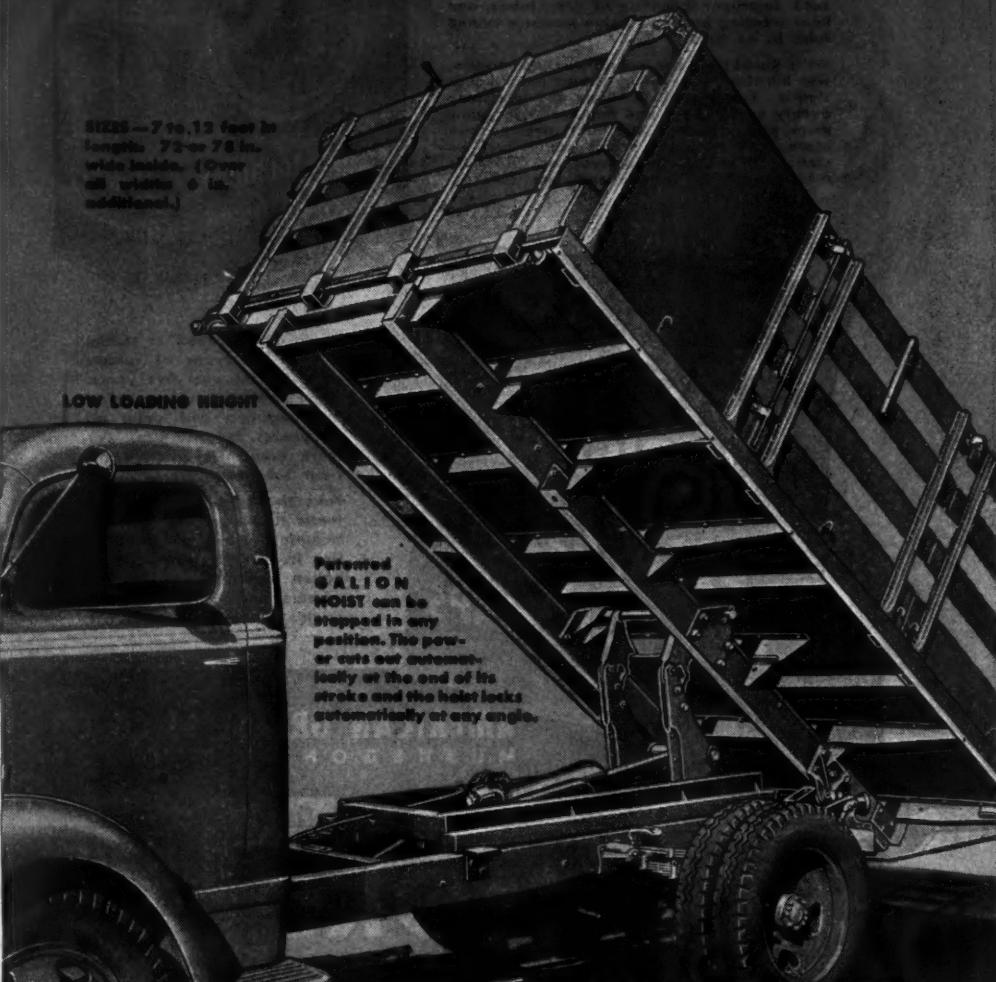


Culver O. Spencer has become a member of the sales department of the Walker Mfg. Co., Racine, Wis.

Tracy V. Buckwalter, who for the past 25 years has served as chief engineer and vice president of the Timken Roller Bearing Co., retired on April 30



THIS NEW AND IMPROVED  
**GALION**  
HYDRAULIC HOIST and BODY  
Will Add Extra Utility to Any  
Conventional Platform Truck!



LOW LOADING HEIGHT

Patented  
**GALION**  
HOIST can be  
stopped in any  
position. The pow-  
er cuts out autom-  
atically at the end of its  
stroke and the hoist locks  
automatically at any angle.



Standard body has removable sides and rear corner posts with double acting end gate that drops flush with floor. Available with 18" solid sides or 42" stake sides. Body longitudinal side ribs on chassis frame.

CONTACT YOUR **GALION**  
DISTRIBUTOR for complete  
information on this improved  
platform hoist and body.  
From the complete Galion line,  
you will find a better material  
handling unit for your imme-  
diate and postwar require-  
ments.

THE **GALION ALLSTEEL BODY CO.**  
Galion, Ohio, U. S. A.

## Jones Heads New Heinz Division

A new division known as the Transportation and Warehousing Division has been created by H. J. Heinz Co., Pittsburgh, under the direction of Ross E. Jones, Jr., former traffic manager. The change gives Mr. Jones the title of manager of transportation and warehousing.

(TURN TO PAGE 162, PLEASE)

# RUGLYDE

UNBALANCED  
TENSION  
Kills

Synthetic rubber is a godsend. But watch out! Improper mounting of tires, tubes, and flaps creating uneven tension means a ruined tube in no time.

With Ru-GLYDE, the scientific, ready-to-use, wet lubricant for rubber, correct mounting is simple. Easily applied. Wets and lubricates evenly so that tube and flap seat with minimum pressure, and slip, not stretch, into place. 100% safe. Won't cause rust or static. Harmless to natural or synthetic rubber; and to wheel and rim finishes.



AMERICAN GREASE STICK CO.  
MUSKEGON • MICHIGAN

Thoroughly proved in actual use on all types of rubber parts for the past five years. Adopted by leading tire manufacturers and major oil companies for tire use. Far more economical than inefficient substitutes.

Take the "grief" out of synthetic tire mounting and dismounting. Multiply tire miles. Use Ru-GLYDE. Available in gallon cans from leading jobbers and major oil companies everywhere.



J. C. Rowold, left, vice president of Mack-International Motor Truck Corp., has been appointed manager of Mack's Pacific Coast Division. William R. Waddell, right, manager of Federal-Mogul Service, division of Federal Mogul Corp., died recently in Detroit.



Harry Bernard, left, has been appointed director of service and service engineering at Mack Trucks, Inc., New York. L. T. "Tom" Greiner, right, has been named district manager of the Replacement Tire Sales Division of the B. F. Goodrich Co. in Oklahoma City.

# TRUXMORE

WORLD'S BEST 3RD AXLE

CARRIES two payloads in one. SAVES in first cost (up to 40%), on insurance (up to 50%), fuel costs (up to 20%), tires (50% to 100% longer life), road time (up to 20%), breakage of fragile loads, license fees, dead weight, maintenance costs. Write for Circulars.

DOUBLES YOUR TRUCK CAPACITIES

1731 FILLMORE AVE.  
TRUCK EQUIPMENT CO.  
INC.  
BUFFALO, N.Y.

NATIONWIDE SALES & SERVICE  
THRU TRUCKSTELL DISTRIBUTORS

## AN OLD FRIEND RETURNS!

The well known Rimac Valve Spring Tester, for years a highly valued item of shop equipment, is back on the job. Uncle Sam had first call on this finely built, accurate instrument. And incidentally, while satisfying stiff military requirements, our engineers developed ways of making it better than ever—for you!

### RIMAC SPRING TESTER

For Valve & Clutch Springs

We are glad to announce that soon we hope to resume deliveries in limited numbers to our trade. Write for details.

RINCK-McILWAINE, INC.  
16 Hudson St., New York 13, N. Y.



Range up to 250 lbs.  
PRICE \$40



## FREE LITERATURE

(CONTINUED FROM PAGE 58)

### Victor Gasket Co. Issues Catalog

The Victor Mfg. & Gasket Co. has just issued the 14th edition of the Victor Gasket Guide. It contains comprehensive data on all kinds of gaskets required for replacement in automobiles, trucks, tractors, buses and industrial and marine engines. Among the convenient new features are full numerical listings of factory part numbers with Victor numbers, special indexing when there are numerous motor models,

markings of alphabetical listings to show the contents of gasket sets, and an up-to-the minute popularity rating of gaskets and oil seals.

### White Publishes Booklet

An informative and interesting booklet has been compiled by The White Motor Co. to depict its part in the present World War. The well-illustrated piece is appropriately labeled "White Reports on Its Five Wartime Assignments." The products of these assignments are Combat Vehicles, Supply Line Trucks, Vital Home Front Trucks, Essential Bus Transportation, and White Personalized Service Plan.

### Randolph Offers Guide

To help mobilize employee fire-fighting, Randolph Laboratories, Inc., has prepared a new *Fire Extinguisher Installation Guide* that illustrates which extinguishers should be used and installed for the different kinds of fires that may break out. Posted over every fire extinguisher in the plant, this gum-edged, 8½ by 20-in. chart attracts the attention of the employees, quickly shows them the correct use for extinguishers. It is designed for notebook insertion as well as wall-posting. Quantity copies are available without charge.

### Auto-Lite Publishes New Catalog

The Electric Auto-Lite Co. has published a complete new automotive wire and cable specification catalog—the first to be published during the war. Included are listings of new types of primary and lighting wire which have been missing under wartime restrictions. Specifications for battery cable and spark plug wire sets for all makes and models of automobiles along with special charts to aid the automotive service man are included.

### New Truck Film Available

"Rolling to the Rhine" is the latest film of the War Department's Motion Picture Branch, Industrial Services Division. This 10-minute picture tells the story of the continuing "Battle of Supplies" and, while it does not have so many battle scenes as did "Highballing to Victory," it does emphasize the important role men and trucks and tires performed in delivering every front-line need. Over 90 per cent of the footage has been actually filmed in combat areas. For the address of your nearest film distributor, write to Chief, Motion Picture Branch, Industrial Services Division, Bureau of Public Relations, Pentagon, Washington 25, D. C.

### Kelite Publishes Bulletin

A 28-page bulletin on "Automotive Maintenance" has been published by Kelite Products, Inc., Los Angeles. The bulletin outlines the characteristics and principal uses of Kelite cleaning materials. It suggests methods for degreasing, descaling, paint stripping, carbon removal, motor overhaul, parts reclaiming and car washing.

END

(Please resume your reading on P. 59)

TRADE MARK  
YANKEE  
REG. U. S. PAT. OFF.  
approved  
Sealed Beam  
CONVERSION  
KITS  
show the way safely!  
CONVERTS HEADLAMP LIGHTING  
for Safer NIGHT Driving  
ON MOTOR VEHICLES PRIOR TO 1940  
Here's headlamp lighting that NEVER grows dim! YANKEE Sealed Beam CONVERSION KITS insure ADDED safety for after-dark driving, thus eliminating to a large degree the cause of most night traffic accidents.\* YANKEE Sealed Beam CONVERSION KITS provide PEAK EFFICIENCY in headlamp lighting because the units are completely sealed. They provide a safer traffic beam with relief from glare when meeting approaching traffic. They're the beams truck and bus operators want to use. Installation is simple and easy.  
ALL PARTS ARE PROTECTED AGAINST CORROSION  
\*75% of most traffic accidents at night are caused by poor headlamp lighting. (S.A.E. statistics.)  
WRITE FOR DESCRIPTIVE CATALOG SHEETS  
OR ASK YOUR JOBBER SALESMAN  
YOU'RE SAFE WHEN YOU CAN SEE WITH YANKEE  
TRADE MARK  
YANKEE  
REG. U. S. PAT. OFF.  
YANKEE METAL PRODUCTS CORP., NORWALK, CONN., U. S. A.

HEAVY DUTY MOTOR TRUCKS  
AND  
GASOLINE ELECTRIC  
GENERATING SETS  
DUPLEX TRUCK COMPANY  
Lansing, Michigan

**A LITTLE TOOL THAT MAKES TOUGH JOBS EASY**

**Sioux 1/4" ALL ANGLE ELECTRIC DRILL**

Photos taken under actual working conditions — courtesy Northwest Airlines, Inc.

**STANDARD THE**  
**ALBERTSON & CO., INC.**

**WORLD OVER**  
**SIOUX CITY, IOWA, U. S. A.**

**Your Jobber Sells It**



## CCJ NEWSCAST

(CONTINUED FROM PAGE 158)

### Spatta Heads Clark

Directors of Clark Equipment Co., Buchanan, Mich., elected George Spatta, formerly executive vice-president, to be president, succeeding the late Albert S. Bonner.

### Schad Named Atlantic Vice President

H. G. Schad has been elected a vice-president of The Atlantic Refining Co. He is a director and general manager of transportation of the company.

# Construction of Storage Facilities for Transport Equipment Approved

A limited number of applications for the construction of indoor storage facilities for transportation equipment may now be approved, the Office of Defense Transportation has announced.

Partial relaxation of the restriction on this type of construction has been made by the Construction Bureau of the War Production Board as a result of a request by

the ODT that a more liberal viewpoint be taken toward this type of construction.

In its request to WPB, the ODT pointed out that indoor storage facilities are urgently needed to protect transportation equipment, particularly trucks and buses, from weather damage. In addition, critical shortages of transportation facilities, both passenger and freight, together with heavier loadings and the increased age of equipment are necessitating more maintenance and repair work.

Construction of indoor storage facilities, the WPB Construction Bureau said, can be initiated only to the limited extent that construction materials are available. On this basis it may be possible to approve construction applications for the "most urgent cases involving the protection of transportation equipment."

## OUT OUR WAY



**SOL-SPEEDI-DRI** keeps floors clean and safe . . . with ease. It's a white, granular material that soaks up oil or grease like a blotter takes up ink. Just spread a thin carpet of **SOL-SPEEDI-DRI** in pits, under lifts, on shop-floors, driveways . . . wherever oil or grease-deposits accumulate . . . and it immediately provides a white, safe, non-skid surface. When oil-deposits have been absorbed, sweep up **SOL-SPEEDI-DRI** with a stiff broom, and the floor or driveway will be dry, clean, and

safe. **SOL-SPEEDI-DRI** will not readily burn, even when saturated with oil.

No back-breaking scrubbing, no dangerous solvents, caustics, or other odorous cleaning chemicals. No expensive, complicated machines.

**SOL-SPEEDI-DRI** is stocked by distributors and warehoused in all leading cities. Write your name and address on the margin of this page for a generous, Free Sample.

**SUPPLIERS:** East — Refiners Lubricating Co., New York 1, New York.  
Midwest & South — Waverly Petroleum Products Co., Philadelphia 6, Pa.  
West Coast — Waverly Petroleum Products Co., Russ Bldg., San Francisco 4, Calif.



**C. P. Weaver** has been elected vice president of the Cooper Tire Division of Master Tire and Rubber Corp., Findlay, Ohio



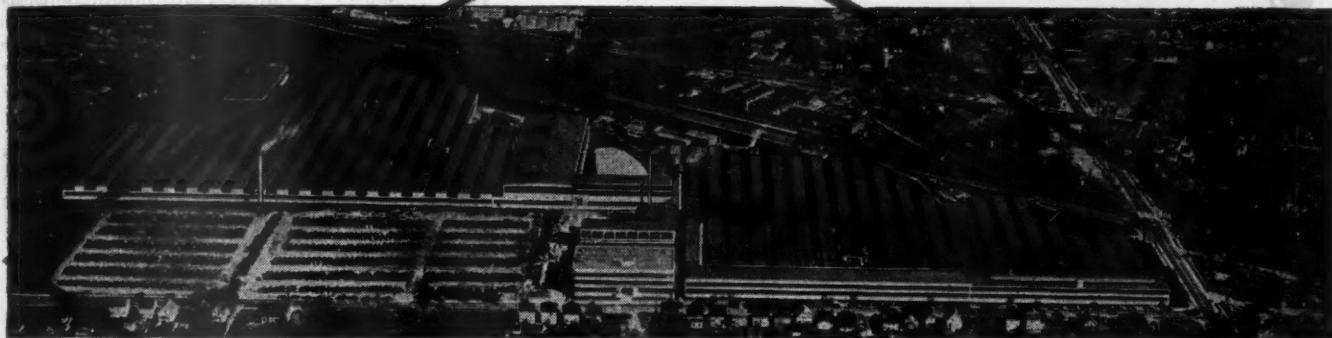
The election of Robert C. Lee as vice president and treasurer of the White Motor Co. has been announced



# THESE GREAT SPICER FACILITIES

available for civilian automotive production needs

*minimum reconversion requirements*



Main office and works, Toledo, Ohio, employing over 6000 people



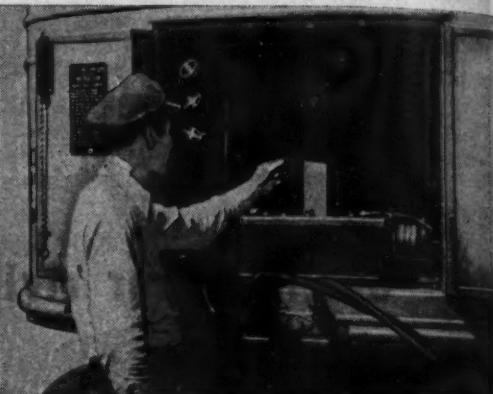
Hillsdale, Michigan, plant, employing over 650 people

Pottstown, Penna., plant, employing over 1750 people



Many, many acres of modern, well-equipped Spicer plants are ready to turn out high-quality transmissions, auxiliaries, torque converters, clutches, universal joints, propeller shafts and axles when our wartime obligations are fulfilled. Many, many thousands of skilled workers are ready to turn their war-sharpened abilities to civilian production. Our enormous facilities and minimum reconversion needs will enable us to swing into fast manufacturing schedules to supply the great pent-up demand for new civilian automotive vehicles. Look to Spicer for the most advanced and efficient automotive power transmission developments—let Spicer deliver the goods for your power-delivery needs! Spicer Manufacturing Corporation, Toledo, Ohio.





## CURTIS

### Your Assurance of a Dependable, Economical Air Supply

Curtis Air Compressors are famous for their ability to stand up day after day under the hardest service conditions without requiring frequent adjustments or maintenance.

Engineering advantages include tapered roller bearings — self oiling — and traditional Curtis precision workmanship throughout.

### AIR COMPRESSORS

Curtis Air Compressor  
Sizes up to 10 H.P.



**CURTIS PNEUMATIC MACHINERY DIVISION** of Curtis Manufacturing Company

1970 Kienlen Avenue, St. Louis 20, Missouri

★ 91 Years of Quality Manufacturing ★

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Co.  
1970 Kienlen Avenue, St. Louis 20, Missouri

C-443

- Please send me Name.....
- Bulletins C-69-C and Firm.....
- C-65-B on the complete line of Curtis Address.....
- Air Compressors. City..... Zone..... State.....

First of its kind to go into service, this new Fruehauf refrigerator van, equipped with built-in "Trail-aire Conditioner," is used by Deitch of Detroit, distributors of Honor Brand Frozen Foods, for overnight shipments from Detroit to warehouses in Chicago, Cincinnati, Indianapolis and St. Louis. The compact Fruehauf Trail-aire unit in the nose of the trailer maintains a constant temperature with an air circulation of 1500 cu. ft. per minute, and can be used to supply either heating or cooling, as needed. It operates with the mere push of a button. The trailer, which is completely insulated, is a 30-ft. tandem-axle model, carrying loads that average 30,000 lbs.

### CCJ NEWSCAST

(CONTINUED FROM PAGE 162)

#### Lonn Catalog Available

A new 24-page catalog released by the Lonn Mfg. Co., Indianapolis, Ind., describes its complete line of Lonn Air Saver blow guns, spray guns and water savers, with physical specifications and tips on where and how to use them.

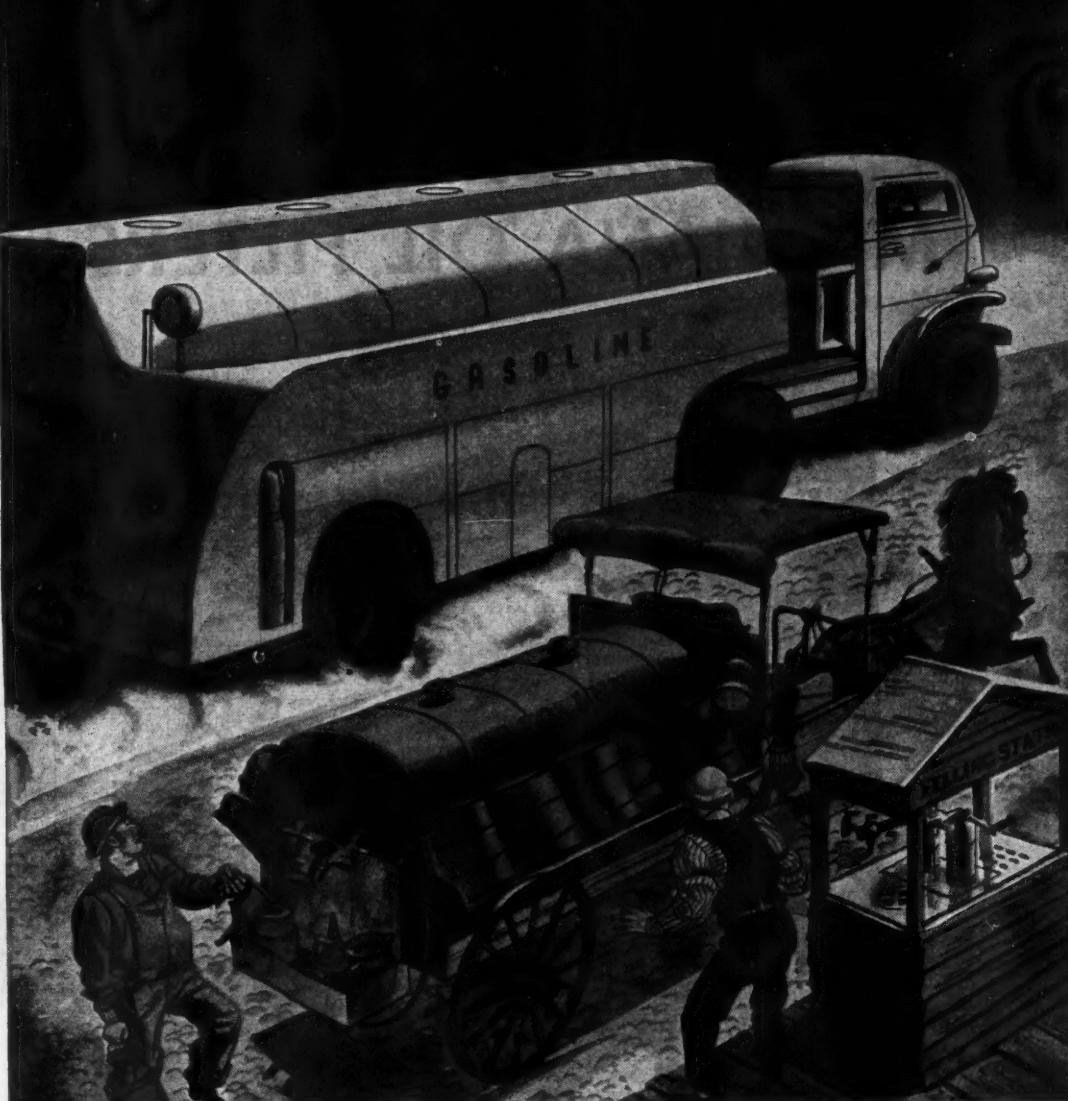
#### Death Cheats Driver of Citation

Thirty-nine years of driving without accident came to an untimely stop for Lamont L. Harpst, 61, Railway Express Agency driver, when he died suddenly only a few hours before he was to receive a special citation from the Buffalo Chamber of Commerce Safety Council for having covered over 325,000 miles without a mishap to mar his record.

(TURN TO PAGE 166, PLEASE)

Specify  
**Velvetouch**  
BIMETALLIC FRICTION MATERIAL  
for  
**CLUTCHES AND BRAKES**  
THE S. K. WELLMAN CO.  
CLEVELAND, OHIO

There's  
been a  
big change



★ The tank wagon of the horseless carriage days has grown up. Huge transport tanks now serve America's millions of essential cars, trucks and tractors.

The demand for a better tapered roller bearing grew, too. And Tyson found the way to make that better bearing—by adding 30%



TYSON BEARING CORPORATION, MASSILLON, OHIO

more rollers around the raceway.

Those extra rollers mean greater load-carrying capacity . . . extra rigidity . . . maximum efficiency . . . and *almost double bearing life*.

Tyson "All-Rolls" Bearings are solving heavy-duty problems for users everywhere. They'll do the same for you.

COUNT THE ROLLS • THE ROLLS COUNT



tyson

**THE LAST WORD IN ANTI-FRICTIONEERING**

# When Servicing MICHIANA OIL FILTERS



Replace  
the Elements  
with

MICHIANA  
ELEMENTS

Insure  
"NEW" FILTER  
PERFORMANCE

You can always have the maximum oil filter performance and efficiency—equal to that of a new filter—if when servicing you always use MICHIANA replacement filter elements.

MICHIANA Oil Filters are protecting millions of horsepower of engines all over the world, daily proving their high dirt-absorbing and oil-cleaning efficiency. To insure this performance, be sure when servicing that MICHIANA Elements are used. MICHIANA PRODUCTS CORPORATION, Michigan City, Ind.



Complete Replaceable Type Element illustrated above. Economical Re-Packable Type Elements are also available.



Write for  
Bulletin 839.

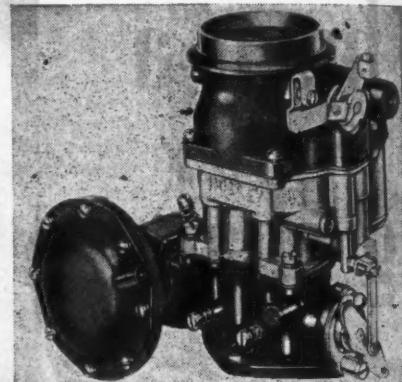
**MICHIANA  
OIL FILTERS**

## CCJ NEWSCAST

(CONTINUED FROM PAGE 164)

### New Holley Carburetor Provides Positive Control

Fleet operators will be interested in the new Holley Centri-Vac carburetor-governor manufactured by the Holley Carburetor Co., Detroit. The new Model AA-1G carburetor is a dual downdraft plain tube type, incorporating new and improved features designed to control engine speed without surging, improve power and reduce fuel consumption. Sharper, more positive control is claimed by the manufacturer. The unit can be cleaned and serviced with ordinary tools, and the governor rotor can be serviced independent of the carburetor.



The governor throttle actuated mechanism is an integral part of the carburetor and provides the needed power required for moving the throttle to governing speeds as controlled by a separately driven governor rotor. The combination of these two units has been engineered to give instant response and accurate governing.

The carburetor is fully balanced and sealed. All vents and bleeds are taken from the main air entrance, thus insuring precleaned air.

A removable fuel discharge nozzle is used in the unit. A new type power valve is operated by manifold vacuum and is fully automatic in operation. It delivers the added supply of fuel required for maximum power.

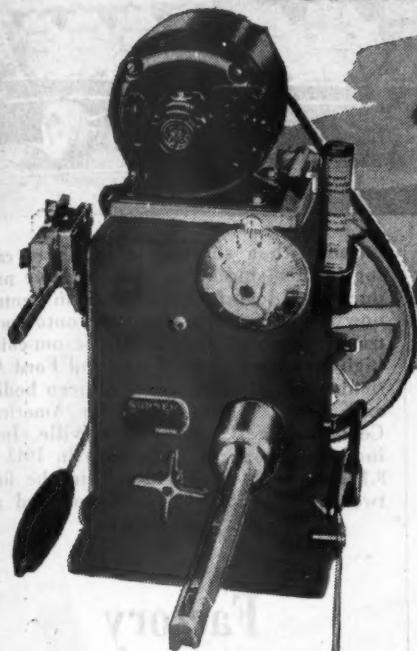
The throttle actuated accelerating pump is sturdy in design and completely enclosed. It is provided with an adjustment which compensates for changes in seasonal requirements.

The unit can be considered as two carburetors built into one. There are separate (TURN TO PAGE 168, PLEASE)



Edward G. Weed, executive vice president of the Pyrene Mfg. Co., Newark, N. J., died on April 23 at Toronto, Ontario.

Truck and Bus Repairs Last Longer—  
Breakdowns Are Fewer, When You Hone  
Bushings on



## The SUNNEN BUSHING GRINDER

You can depend on a guaranteed accuracy within .0001" when you use the Sunnen Bushing Grinder on parts such as connecting rods, piston pins, steering sectors, spindle bodies, air compressors, water pump bushings, generator bushings, and dozens of others. It will handle any hole from .480" to 2.400" in diameter and up to 7" in length.

The honing action of an abrasive stone will produce an accurately ground hole with a super-smooth finish of from 2 to 3 micro inches. You have a surface that fits better, wears longer, and holds a better film of oil. With the Sunnen Bushing Grinder, there are no seizing, scoring, chatter marks, high spots, or other surface irregularities to cause trouble.

You get the kind of job upon which you can depend — the kind of job your service men will be proud to turn out — the kind of job you need to keep your trucks and busses on the street. Ask your jobber salesman for details.

**SUNNEN**

**Sunnen Products Company**

7917 Manchester Avenue, St. Louis 17, Missouri

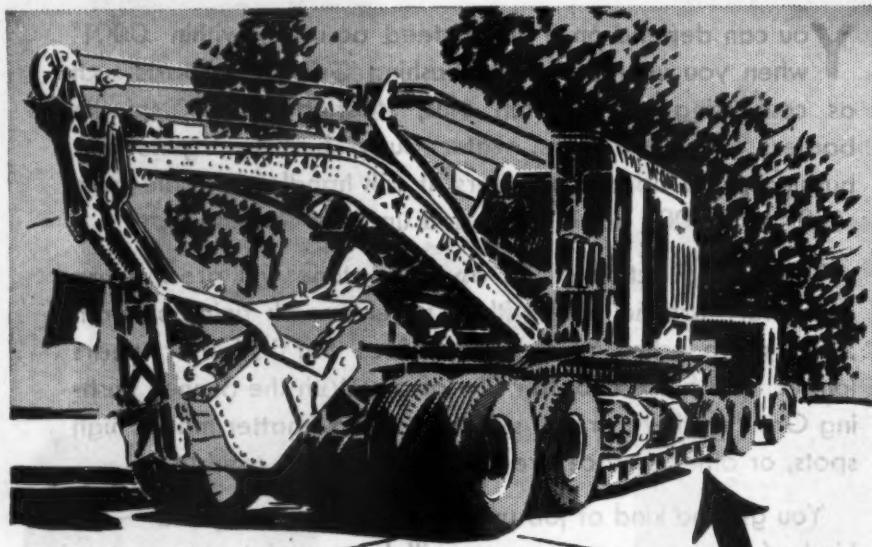
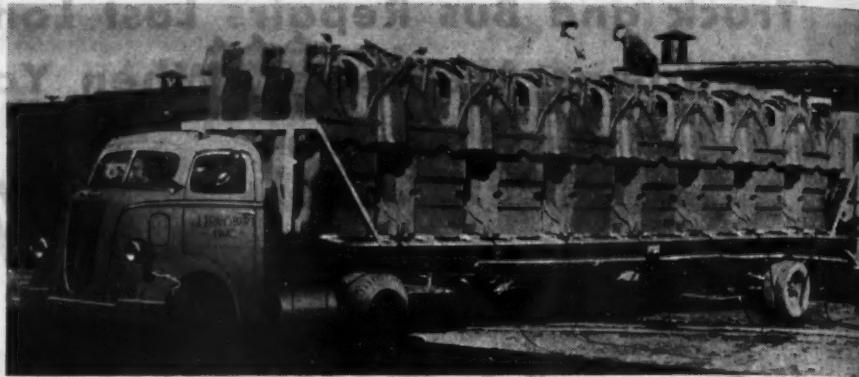
Canadian Factory: Chatham, Ontario

## CCJ NEWSCAST

(CONTINUED FROM PAGE 166)

sets of venturi tubes, idle tubes and throttle plates and a separate main metering system and idle system, one set for each side of the carburetor.

Although the carburetor installation is conventional, a drive must be provided for the governor rotor unit. This is usually accomplished through a tongue and groove drive, driven by the ignition distributor shaft. Other installations include a special Holley or Mallory ignition distributor with built-in governor rotor.



## HEAVY SERVICE

The ASF Side-Oscillating 5th wheel is the obvious selection for use wherever universal action is desirable to prevent the wracking strains of uneven footing. And this oscillating hitch facilitates side loading without throwing tension on your equipment.

It is fitted for heavy service because the maximum gross load is unlimited, with provisions made to install jaws to take a 3½" king pin.



Write direct to us for the name of the ASF distributor nearest you.

**ASF Safety 5TH WHEEL**  
Automotive Division  
**AMERICAN STEEL FOUNDRIES**  
400 NORTH MICHIGAN AVENUE, CHICAGO 11, ILLINOIS

Faced with a shortage of railroad cars for further shipments of its volume production of jeep bodies, American Central now loads 27 units at a time onto truck trailers such as this, and fills out-going highways leading to Willys and Ford Assembly plants. Shipments of jeep bodies and aircraft wings from the American Central Mfg. Corp., Connersville, Ind., increased from 5,822 carloads in 1943 to 8,157 carloads in 1944 and, in the first two months of 1945, have smashed all previous records.

## Factory Appointments

J. M. Warimont, as assistant sales and advertising manager of Sterling Steel Products Co., Chicago.

Ray E. Madden, as district sales and service representative in the Chicago area for Towmotor Corp., and Frank Colker and Thomas F. Maloney, as district sales representatives for the Detroit area.

John F. Connors, Jr., assistant manager of the Richmond, Va., branch of Ford Motor Co., as assistant manager of the Washington, D. C. branch; Emerson Plank, as manager of the Richmond branch; John M. Murphy, as manager of the Denver branch; and George L. Boggs, as manager of the Salt Lake City branch.

A. E. Snyder, as president of the Polarized Products Corp., and executive vice-president of the K-D Lamp Co.

Dan B. Mooney, as Pittsburg assistant regional manager for the Dodge Division, Chrysler Corp.

(TURN TO PAGE 170, PLEASE)

**AIR-GO** 100% PETROLEUM PRODUCTS

**MOTOR TONIC** drives automobile and operating costs . . . results in more engine power, more mileage per gallon, less wear and tear, freedom from carbon formation, sludge, etc. Add to any motor oil.

**GAS FLUID** Aids in reducing gasoline and oil consumption, prevents corrosion, assures cleaner top motors, reduces metal wear and less, helps eliminate sticky valves. Complete details on request.

ALLEGANY OIL CO. 216 NO CLINTON ST. CHICAGO 6, ILL.

# ADD EXTRA LIFE TO YOUR TIRES WITH SPEAKER SELF-VULCANIZING REPAIRS

**TODAY**, rubber conservation is a "must". You will get every possible mile of road service out of your tires if you use exclusive Speaker Tire Patches to repair punctures. There is nothing else like them. Developed originally for the tough going of battle front service, they have proved a real boon at home in keeping vital transportation rolling.

Speaker Super Tire Repair Units have been scientifically developed in cooperation with leading tire companies. They are "built like a tire" with tough criss-cross construction. FlexForm molded "feather edge" cushion-gum lamination. Road heat vulcanizes them to the tire. Anyone can apply them, any time, anywhere — in shop or on the road, without special equipment. They won't shift, slip, buckle or cause undue wear on the tube. They are specially packed and sealed to assure factory-freshness when used.

Every truck, bus and car you operate should carry Speaker Tire Patches for quick repairs, to shorten delays of pay loads and give you many extra miles from tires you might otherwise discard. Of course, always have them ready for immediate use in the shop. Order from your nearest jobber now.

**YOU SURE CAN  
"WELD" A LOT OF  
EXTRA MILEAGE  
INTO A TIRE WITH  
SPEAKER TIRE  
PATCHES**

For synthetic or natural rubber tube repairs, use Speaker MATCH PATCHES, in 4-Way-Sealed packages. They assure safe, permanent repairs.

**J. W. SPEAKER CORP.**  
3059 N. Well Street, Milwaukee 12, Wisconsin  
Canadian Speaker Corp., Ltd., Montreal 3

## CCJ NEWSCAST

(CONTINUED FROM PAGE 168)

L. H. Rose, as assistant sales manager of the Automotive and Aircraft Division of American Chain & Cable Co., Inc.

Ray S. Jenkins, as general supervisor of all field recap plants of the B. F. Goodrich Co.

B. N. Hanby, as manager of Wagner Electric Corp., Omaha Automotive branch; C. G. Jackson, as manager of the Boston Automotive branch, replacing Fred Pasher, now manager of the Cleveland branch.

L. W. Smead, as assistant branch manager of the Buffalo branch, Ford Motor Co.; R. A. Pankof, as assistant branch manager at Pittsburgh.

Clyde E. Rapp, as manager of the Dallas office of Ford Motor Co.

### Restrictions on Automotive Replacement Parts Removed

All restrictions on production and distribution of automotive replacement parts have been removed through a revision of Limitation Order L-118, the War Production Board has announced.

The action taken, WPB said, is in accord with recommendations for post-V-E Day made by the Replacement Parts Industry Advisory Committee.

Previously, production of replacement parts was limited to items listed on Schedules I and II of the order.

WPB said that it was generally agreed, however, that production of certain automotive replacement parts should be protected by firm allotments of controlled materials and by the preference ratings assigned to essential civilian production. This protection is required, WPB explained, because of the competition for material that exists and will continue to exist between the producers of less essential civilian end-products and those manufacturing more essential items that require substantial quantities of controlled materials. Further reason for such protection is found in the competition existing in forge, foundry and machine shop facilities between the parts industry and end-products currently produced and those coming back into production. For this reason, WPB said, the order has not been revoked in its entirety.

A preference rating of AA-1 is assigned under the revised order to producers of replacement parts and to the manufacturers of the components of such parts listed on Schedules I and II, except parts and components for light trucks and passenger automobiles, for which a preference rating of AA-2X is assigned.

The emergency repair certificate is retained in the present order to allow manufacturers to differentiate between breakdown and stock orders.

END

(Please resume your reading on P. 166)

### Classified Advertisement

Spare parts manufacturer, having completely organized sales distribution in France, seeks agency for sale and service of any interesting bus and truck parts. Box 73, Commercial-Car Journal.



MANUFACTURING COMPANY, INC.

LONG ISLAND CITY, NEW YORK

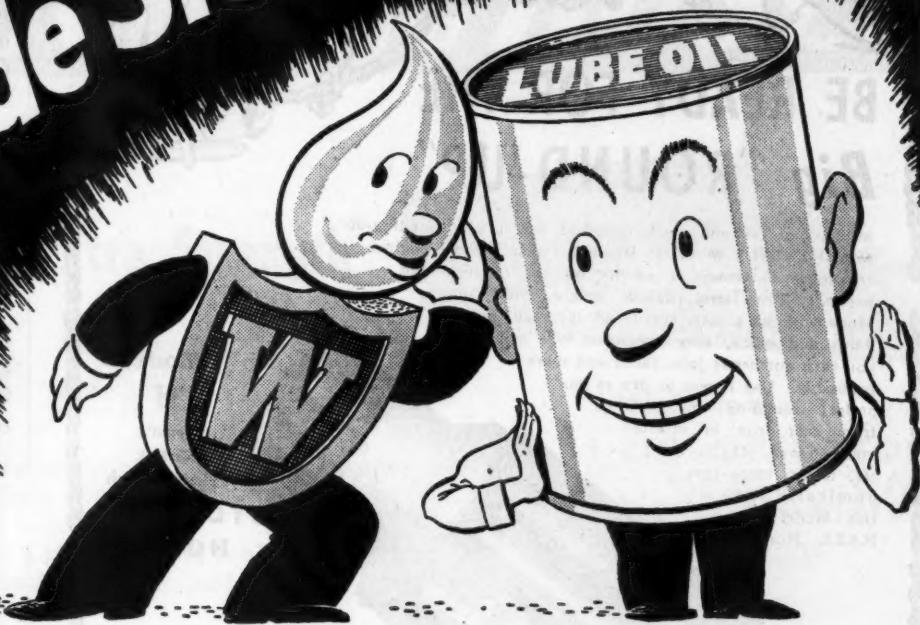
STARTING • LIGHTING • IGNITION • REPLACEMENT PARTS  
P & D MANUFACTURES ONLY ONE COMPLETE QUALITY LINE. ONLY THE FINEST MATERIALS AND WORKMANSHIP OBTAINABLE ARE EMPLOYED

★ ★ ★ ★ ★ ★ ★ ★  
**KATHANODE**  
THE ORIGINAL SPUN GLASS BATTERY  
THE KATHANODE CORPORATION, CHICAGO, ILL.



Specify **KATHANODE**  
for all battery replacements. Kathanodes cut  
operating costs in bus and truck service.

# The Inside Story...



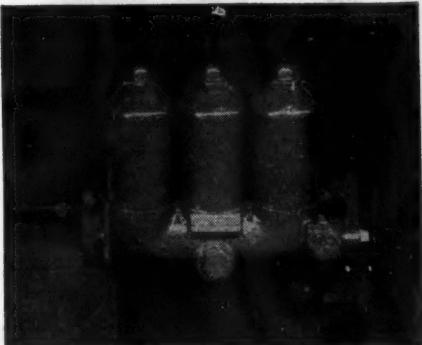
Yes, brand new lubricating oil is clean. But wait until it gets inside that motor of yours. That's when the important, inside job of Winslow Full-Flow Oil Conditioners begins to perform.

Many of the leading operators keeping the Nation's transportation system rolling use Winslow Full-Flow Oil Conditioners and Winslow Replacement Elements. They'll tell you they installed them because they give full protection from motor-destroying substances in their lubricating system, and because they do a full-flow *in line* job of conditioning the lube-oil.

Winslow Replacement Elements—made in more than 130 different sizes to fit any standard make filter—embody exclusive, patented features which assure rapid and efficient oil cleaning. They also have the extra capacity to consistently pass and condition oil over a longer period of time. The element *expands with use*. This means maximum porosity and oil cleaning ability long after many ordinary filter elements become clogged.

In addition to the full line of lube-oil Conditioners and Replacement Elements, Winslow also makes a wide variety of fuel oil filters. Order from your jobber today.

## PROOF IN USE



Winslow full-flow installation on Hall-Scott Model 400 heavy-duty truck motor.

For sustained efficiency the precision-machined parts of modern heavy-duty engines must be lubricated with *clean* oil—oil free of grit, acid and moisture.

Write or wire today for full franchise information to Winslow Sales Company, 406 Montgomery St., San Francisco 4, Calif.  
24-H-3

A Product of WINSLOW ENGINEERING COMPANY • OAKLAND 8 • CALIFORNIA

**WINSLOW**  
FUEL FILTERS • OIL CONDITIONERS • ELEMENTS



## BE READY FOR THE Big "ROUND-UP"

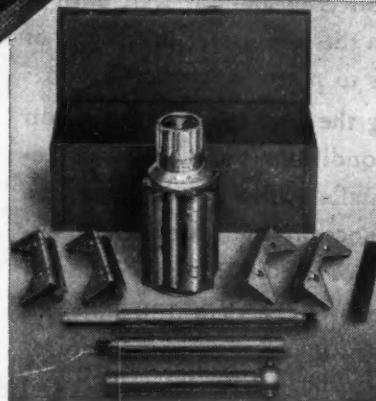
Millions of car and truck cylinders will need "rounding-up" with this HALL Model H Hone this year if those engines are going to remain in service for the duration and beyond. This faster, lighter weight, wider range Hone with its greater speed and accuracy, finer finish and quick, easy expansion will help you turn out better jobs, faster and more profitably. Use it wet or dry as you prefer; round-up any cylinder from cast iron to inserted steel sleeves. Do it better, faster, more economically with this Model H HALL Hone.

USE  
IT  
WET  
OR  
DRY

HALL Model H Cylinder Hone with Micrometer Adjustment comes complete in metal box as shown at right. Handles range of 2.6" to 5 1/2". Special oversize Stone Carriers are available to increase range to 6 13/16". Honing Stand and Vacuum System also available. Long lived Honing Stones in a variety of grits are reasonably priced and readily available.



**Model  
H**  
World's  
Fastest  
Finest-Finish  
**CYLINDER  
HONE**



THE HALL MANUFACTURING CO., TOLEDO 7, OHIO

Order the HALL  
Model H Cylinder  
Hone from your  
Jobber today.

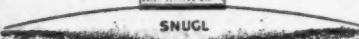
Write the factory  
about HALL Valve  
Servicing Equip-  
ment today.

# HALL



### SNUGL FAD-A-WAY AUTOMOTIVE WHEEL BALANCING WEIGHTS

TRUCKS • BUSES • PASS. CARS



PAT. NO. D-119-321—D-5189

FACTORY  
MID-WESTERN AUTO PARTS  
KOKOMO, IND.

WEST COAST DIS.  
MID-WESTERN AUTO PARTS  
910 W. PICO BLVD.  
LOS ANGELES 15, CALIF.

## INSPECT-CORRECT THE MAREMONT WAY



MAREMONT AUTOMOTIVE PRODUCTS, INC. • CHICAGO 8, ILLINOIS

## NEW PRODUCTS

(CONTINUED FROM PAGE 125)

### P80. Plastic Card Holder

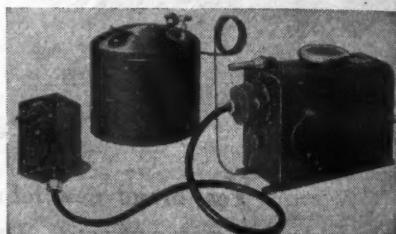
The Plastic Division of the Hollywood Athletic Co., Los Angeles, Cal., announces a new transparent Plastic Card Holder for labeling indexed storage items.

The new product comes in one size — 2 1/4 x 3 1/2 in.

Use Free Postcard For More Details.

### P81. Engine Preheater

A new type of engine preheater has been developed by the Nemco Electric Co., Seattle, Wash., and is being distributed by Hot-Head Sales of Spokane.



Called the Hot-Head, it is designed in three models: the electric type for use where power is available; the gasoline burning type, for field or shop use, and the combination all-purpose unit.

The heater does not eliminate the use of anti-freeze solution, although it is possible to use plain water if the gasoline unit is employed and the weather is not too severe. The water in the head is kept warm when the engine is not running as long as 24 hours and over depending upon the outside temperature.

(TURN TO PAGE 176, PLEASE)

# Specially Engineered for **TRUCKS** and **BUSES**

## **Truck BELTS**

Need Extra Strength

Exactly the Same as

## **Truck TIRES!**

You would naturally never think of using passenger car tires on your trucks or buses. Then why use passenger car belts?

The moment you give it a thought, you realize that trucks and buses put a heavier load on belts just exactly as they do on tires.

For example—A typical passenger car belt carries only a 3.8 horse-power load. The belt on a regular truck must transmit 13 horse-power to turn the fan, pump and generator. Again, trucks and buses run longer hours—they change speeds more often, they accelerate more rapidly, decelerate more abruptly with more stops, starts and idling in low gear. Naturally, the strain on truck and bus belts is far greater than a passenger car belt ever has to stand.

That is why big operators by the hundreds are turning to the one belt that is especially engineered to stand this extra heavy service—the Gates TRUCK Belt.

**DELAYS** are what **COST** you **MOST** these days

Longer Wear **CUTS DOWN** Your **SERVICE DELAYS**

Read the letters reproduced on these pages. They tell you how practical, experienced, hard-headed operators are getting 50% to 80% longer belt wear since they began using the Gates TRUCK Belt. More important they tell you how much valuable operating time they are saving through fewer road failures and fewer delays for servicing.

If it is important to you to keep your trucks and buses operating most efficiently and economically, call your jobber today and tell him to send you a trial order of Gates TRUCK Belts.

**GATES Jobbers NOW Have Stocks to Serve You!**

### **SACRAMENTO, Cal.**

"We installed your Series T Black Truck Belt when it was first placed on the market and it is giving approximately 90% longer service than even your pre-war belt."

—Gibson Lines,  
W. T. Smith, Shop Sup't.

"90%  
LONGER  
SERVICE"



**The GATES RUBBER CO., Denver, U. S. A.**  
World's Largest Makers of V-Belts

Hundreds of

**BIG OPERATORS**  
say "50% to 80%  
Longer Wear"

### **NEWARK, N. J.**

"Really tough service on our milk trucks played havoc with belts until we installed Gates Specialty Engineered Truck Belts. We are now using only half as many belts as before—and saving a lot of time previously spent on belt adjustment."

—Bloomingdale Dairy Co., Inc., Edwin R. Fintel, Maint. Supt.

### **MILWAUKEE, Wis.**

"Your specially engineered TRUCK belt is now in use on our entire fleet. It is far superior to any belt we have ever used."

—Advance Express Co., Dave Winters.

### **DETROIT, Mich.**

### **CHICAGO, Ill.**

### **MINNEAPOLIS, Minn.**

### **BOSTON, Mass.**

### **ATLANTA, Ga.**

### **ST. LOUIS, Mo.**

### **PHILADELPHIA, Pa.**

### **LOS ANGELES, Calif.**

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### **BOSTON, Mass.**

### **LOS ANGELES, Calif**

CUT-AWAY  
SHOWS THE  
WORM DRIVE  
PRINCIPLE

## "Aero-Seal" WORM DRIVE HOSE CLAMPS



### Easy to SNAP ON the hose

Simply turn the screw to back the end of the spring steel band out of the housing, then snap the band over the hose, press the end back into the housing and engage the screw to tighten. It's quick, simple, positive, and there are no loose parts to fumble with or drop.

#### FREE SAMPLE for you to try!

This is only one of the many distinctive AERO-SEAL features. Learn how good these new clamps are by trying one yourself! Use the coupon below and send for your free sample clamp today!

AIRCRAFT STANDARD PARTS CO.  
1773 19th AVE., ROCKFORD, ILL.

Please send me one sample "AERO-SEAL"

Hose Clamp. Size preferred \_\_\_\_\_

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

## NEW PRODUCTS

(CONTINUED FROM PAGE 172)

The gasoline type heater operates entirely separate from the electric in the combination unit, although the same heating tank is used for both heating agents. Maximum B.t.u. output of the gasoline burner is 35,000.

With the electric heater three heats can be obtained—1000, 2000, and 3000 watts. For a quick start 3000 watts can be used. When the engine is idle during the work day, the heat can be held to 1000 or 2000, and in the garage at night 1000 watts are usually used to keep the engine warm.

Since no standard mounting is possible, the Hot-Head heater is furnished with straight straps which can be bent, bolted or welded to fit the particular vehicle's needs. The units are small and can be tucked away under the hood.

Use Free Postcard For More Details.

### P82. Twin-Fluted Countersinks

From Grobet File Co. of America, New York 1, N. Y., comes the announcement of a new addition to its line of chatterless countersinks. These twin-fluted countersinks are recommended for cutting aluminum, magnesium, steel, plastics, plywood, etc.

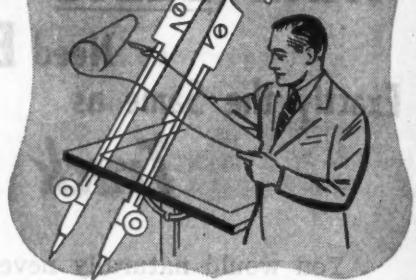


They give a very smooth micro-inch finish and are adaptable for coarser work such as brake linings. These countersinks are made of high speed steel ground after hardening. They are ground to close tolerances, and are fast cutting.

There are eight twin-fluted countersinks to the set, giving a full range of six sizes with duplicates in two.

(TURN TO PAGE 244, PLEASE)

## WGB CLARIFIERS ENGINEERED TO THE JOB



TO KEEP OIL  
CLEANER, LONGER

WGB Clarifiers are adopted by manufacturers, specified for fleets. Leading builders of gas and Diesel engines install WGB Clarifiers as standard equipment . . . and countless cost-wise fleet operators have specified them for their vehicles. Check their three reasons. (1) They keep lubricating oil amber-clear for longer periods. (2) WGB replacement cartridges are inexpensive, and can easily be installed, without tools. (3) WGB Clarifiers are sturdy, simple, trouble-free—built for heavy-duty jobs. Specify WGB Oil Clarifiers for substantial savings in maintenance and operating costs.



Send for your  
free copy of book  
describing WGB  
oil clarifying at  
work in gas and  
Diesel engines.

**WGB**  
OIL CLARIFIER, INC.  
KINGSTON, N. Y.

# Here a new science attacks an old problem



Cylinders in engines usually get a pretty raw deal. They have to take more grueling punishment than any other part of the engine. They... and the rings... bear the brunt of the blame when engines lose power.

Here, in the Van der Horst Research and Engine Testing Laboratories, we are continuously attacking this old problem of wear. The new science of PORUS-KROME processing is attuned to the needs of the various types of engines. Tests are run in several types of engines to determine the degree and type of porosity which will give the maximum wear resistance. Every development or change in PORUS-KROME processing is forthwith scrutinized by the

### "Lord High Inspector" . . . the engine.

Let's work out together a square deal for your cylinders. Our engineers will gladly develop with your engineers the specifications which will multiply cylinder life 4 to 20 times . . . ring life 3 to 5 times. The entire facilities of these laboratories are committed to solving the problem of cylinder wear for engine manufacturers.

Even though building of engines for general use is still restricted, it is none too soon to plan for the use of PORUS-KROME in postwar engines. A request from you will bring complete information about PORUS-KROME. *Van der Horst Corporation of America, Olean, New York, Cleveland 11, O.*

**PORUS - KROME** . . . Good for the Life of your Engines



## WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 36)

per cent of the program. It is believed that due to reporting peculiarities, the transmission percentage does not reflect actual production. All this was accomplished in spite of the contention of Army experts that it could not be done. And there is confidence that production of components this year will excel last year's record.

### No More Turning in Parts

The revision of parts order L-158 includes several provisions of interest to fleet operators. Inventory controls are completely out the window. There is no more need to turn in old parts. No user will have any priority on replacement parts. Even the Army and Navy will be buying over the counter where the parts are intended for non-military uses. The emergency repair order provision is retained. Operators needing parts to make emergency repairs can still use form MT-109. These orders take precedence over all others.

### L-270 Liberalized

A revised version of shop equipment order L-270 was expected to be

approved by the time this item is read. The order has been liberalized. Production on an historical basis is continued but if a manufacturer fails to meet his program other makers will be given the opportunity of completing it. The hope is that in 60 days the steel situation will be such as to permit of further liberalization. There had been no protest from the Army up to the time this was written.

### More Tires in June

Truck tire quotas moved higher in the month of June. There was no official announcement when this was written, but it was understood that civilians would be given 164,000 tires in sizes 8.25 and up, and 361,000 smaller truck tires. This compares with May figures of 156,000 and 314,000 respectively. The Army is screening its requirements and more tires for trucks should be forthcoming. The ODT has its eye on some part of the 5000 daily which were consumed in combat service in the European theater. ODT is prod-  
ding the Army and Lend-Lease and will insist on knowing why more tires are not available to civilians in view of changed conditions. The Army has declared 100,000 truck tires as surplus. All but 16,000 are in sizes 7.50 and under. It is ex-  
pected that they will reach trade channels during the third quarter.

## DYNAMOMETER CHECKS HELP DROP ROAD CALLS

(CONTINUED FROM PAGE 44)

on oil leaks, radiator leaks and heat caused from radiator defects, we have reduced our oil consumption and damage from the effects of low water.

### Checks Tractive Effort

ONE thing we have found is that horsepower under the hood is one thing and tractive effort at the rear wheels is decidedly another thing.

It has shown us that we can lose by having the wrong ratios in the rear-ends and wrong size tires on the back wheels. Our tire department keeps the rims straight and the right size tires on the wheels by checking periodically with the permanent records.

We change rear-end ratios to get the best results from the gasoline and to handle our work best. For instance in a 362 cu. in.-engine in one of our makes we use a 6:41 in direct drive. If it is an overdrive transmission, we go a little lower.

### Used for Break-Ins

WE USE the chassis dynamometer as a breaking-in machine for overhauled engines rather than have them

The red tape of passing them through various government disposal agencies can not be cut.

### Production Statistics

Truck production for civilians in April exceeded the program. Output was 14,389 units against a program of 13,885. However, production for the first four months of this year is 13,864 under the program. Actual output was 48,654, against a program of 62,518. Trailer production for civilians in April was 1997 against a program of 1423. Trailer production for the first four months was 9260 against a program of 7923. However, production included 3972 units which were part of the 1944 program. Consequently only 5288 trailers of the 7923 program for the four months have been built.

### Trucks Go with Troops

The Army in Europe does not intend to leave any trucks behind that can be used in the Pacific. A statement to this effect was made at a press conference in Washington by Major General Frank I. Ross, chief of transportation, European Theater of Operations. He said that trucks would go with troops. The 6x6 will continue to be the big cargo truck in China until decent roads are built.

END

(Please resume your reading on P. 37)

broken in on the road. With the load control we can put a light load on the unit and break it in under shop supervision. If anything develops, it can be corrected quickly. We find this cheaper in the long run. This procedure also prevents damage to an overhaul job from the necessary rapid acceleration needed at times under road conditions.

By delivering a carefully broken-in repair job to the driver he is able to meet his schedules and do his work without any damage to the engine or delay from small troubles.

Miller Motor Express operates from Atlanta to New York and Boston and has four small repair shops in addition to the main shop at the Charlotte terminal, located in Philadelphia, Atlanta, Greenville and Norfolk, Va. It has 129 units of all kinds and 104 trailers.

Postwar plans now in the making include an elaboration and refinement of the present system, all pointed toward elimination of road failures and most of the driver's complaints.

We have learned that no two engines are alike and that best results can be obtained by accurately adjusting each individual engine to reach its peak performance.

END

(Please resume your reading on P. 45)

*This happens to the best galvanized sheets...*

Galvanized sheet steel is an excellent metal for many purposes, but there is one thing it won't do. It won't take and hold paint satisfactorily. The photo tells the story. The raw zinc dried out the essential oils in the paint, caused it to become brittle. Result: early paint failure.

This happens even when the zinc surface is acid-etched. Etching has other disadvantages, too. Besides being slow and costly, it destroys part of the protective zinc coating.

Paint on regular galvanized steel *isn't* satisfactory . . .

*But this bonds  
paint to zinc*

ARMCO Galvanized PAINTGRIP sheets are the answer to this old problem. What's more, they give your trucks and trailers this *triple protection* . . .

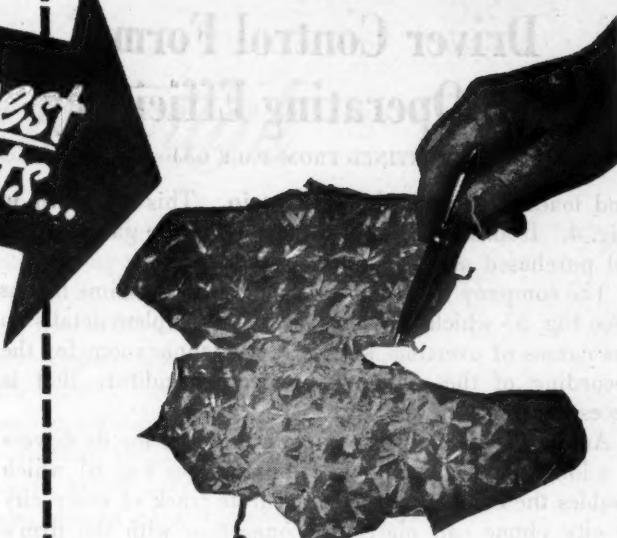
1. The high-quality steel base has a *full-weight coating of zinc*.
2. The coating is given a special Bonderizing treatment at the Armco mills.
3. This "insulated" surface grips the attractive paint finish in a lasting bond — prevents it from drying out quickly and peeling and flaking.

ARMCO Galvanized PAINTGRIP is the logical choice for truck and trailer construction that is to be given an attractive, durable paint finish. Write for the free booklet on this special-purpose steel sheet. It gives complete information. The American Rolling Mill Co., 1751 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

**The American Rolling  
Mill Company**

**SPECIAL-PURPOSE SHEET STEELS**



The "Scratch Test" shows how paint sticks to ARMCO Galvanized PAINTGRIP steel. The top half of the sample is mill-Bonderized. When scratched with a penknife only a slight mark can be seen. Paint on ordinary galvanized steel (bottom half) peels off readily.

# Driver Control Forms Boost Operating Efficiency

(CONTINUED FROM PAGE 63)

and loadings during the entire trip. This is shown in Fig. 4. It also gives all of the details of the gasoline and oil purchased as well as tire changes.

The company furnishes its drivers with overtime blanks (see Fig. 5) which provide spaces for complete details on the causes of overtime work. It has ample room for the recording of the amount of extra expenditure that is necessary for this activity.

Another form that the company provides for its drivers is a long distance telephone call blank (see Fig. 6) which enables the company to keep accurate track of every city to city phone call placed in connection with the firm's business.

There is a delay report illustrated in Fig. 7, which furnishes space for the recording of the causes of time losses so that they can prevent them from recurring. This blank is filled out in duplicate and covers all delays in loading, unloading or other causes. An important feature on this form is the one which says, "No overtime or breakdown time will be paid without a delay report filled out in detail." The company takes the stand that the only way to attain the maximum of efficiency is to find the causes of trouble and delays and strive to eliminate them. For this reason, it feels that this is one of the most important parts of its operation.

The company also maintains a system of tachographs on its trucks so that it can keep track of their driving speeds. These circular cards are carefully filed so that they may be referred to whenever they find it necessary.

The affiliated companies pride themselves upon the extremely good care that they take of their equipment. As an example, Petroleum Transportation Co. has one truck that has been in service since 1928 and has traveled more than a million and a half miles.

"During the period since the attack on Pearl Harbor, our business has increased wonderfully but our additional equipment has not been able to keep up with it, due to shortages of material," said Homer J. Testu of the Petroleum Transportation Co. "Nevertheless our fleets have stood up wonderfully during the war period because we have given them excellent supervision in our repair shop in Kent which is under the skilled management of Jean Barnes, our superintendent of transportation. Our shop is well equipped."

Highlights of the general maintenance program are:

The companies change oil every 1500 miles and grease their drive shafts every 750 miles. The lubrication in the rear end of their four wheel units is changed every ten thousand miles and their six wheel units every fifteen thousand miles.

They adjust their valves and injectors every 5000 miles. New valves and new rings are installed every 60,000 miles. All of the company's trucks and trailers are given a complete overhaul every 150,000 miles.

The Petroleum Transportation Co. has a very simple and satisfactory system of keeping track of its tire changes. It consists of a little white card 3½x6 in. It has circular spaces upon it in which one may indicate the

tires that have been changed as well as spaces for the date upon which adjustments have been made and the name of the driver. See Fig. 8.

The company also requires a report about the vehicle's mechanical condition, which the driver turns in at the repair shop in Kent after each trip. This is shown in Fig. 9. These printed cards give the company information about any trouble with the equipment so that it can be adjusted immediately. This report has proved superior to verbal reports which are sometimes the source of errors and misunderstandings.

Another interesting feature of the Petroleum Transportation Co.'s record system is a business reply card, which is furnished to the various oil companies throughout the territory. This is used to notify the company of the space available for gasoline and oil after unloading has been completed on a certain date.

A trip code card is another form which is helpful because it enables the company to compute the revenue from a trip. It is so arranged that it could be used on a key punch, if the management desires. It also makes it possible to keep track of the percentage of a trip that takes place in various states.

**END**  
(Please resume your reading on P. 64)

## Synthetics Average 70% Pre-War Mileage

(CONTINUED FROM PAGE 66)

again this is particularly true in highway operations. Sectional repairs must be done in a quality shop, using quality materials, and they must be performed by trained and well supervised workmen if the results are to be satisfactory. A great many operators have had satisfactory experience on sectionally repaired tires, but they themselves have done their part to make these repaired tires successful. They have placed repaired tires only on free-rolling wheels and on short-haul jobs where they have had a chance to perform best. Resourcefulness in placing repaired tires on your operation is the key to the final performance you can expect from them.

**SYNTHETIC** truck tires will not stand the abuse which rubber tires stood and still give comparable service. The important variables which must be more closely controlled are the tire loads, tire inflations (there is a tendency to overinflate truck tires), vehicle speeds, dual tire matching and mechanical adjustments affecting tire wear.

It is only fair to compliment the truck operators for the outstanding job of tire maintenance, including recapping and repairing which they have done so far. This summer, though, will be the first complete summer that truck transportation has entered using such large quantities of synthetic truck tires. Most experience so far with these tires has been during the cooler weather periods. An even greater effort must be made to raise current standards of tire maintenance to the highest possible level in order to avoid tire failures and subsequent equipment tie-ups when the hot weather is at hand.

**END**  
(Please resume your reading on P. 67)

# BIG *all the way through*

When you see the new Ward LaFrance commercial models, you'll be looking at something new in transportation... the toughest, sturdiest job on the highway. It's the "civilian" version of the great M1A1 Heavy Wrecker we have been turning out in volume for the Army, developed to be the last word in rugged truck performance... The new Ward LaFrance heavy-duty trucks are "built big" not only in rated capacity, but all the way through.

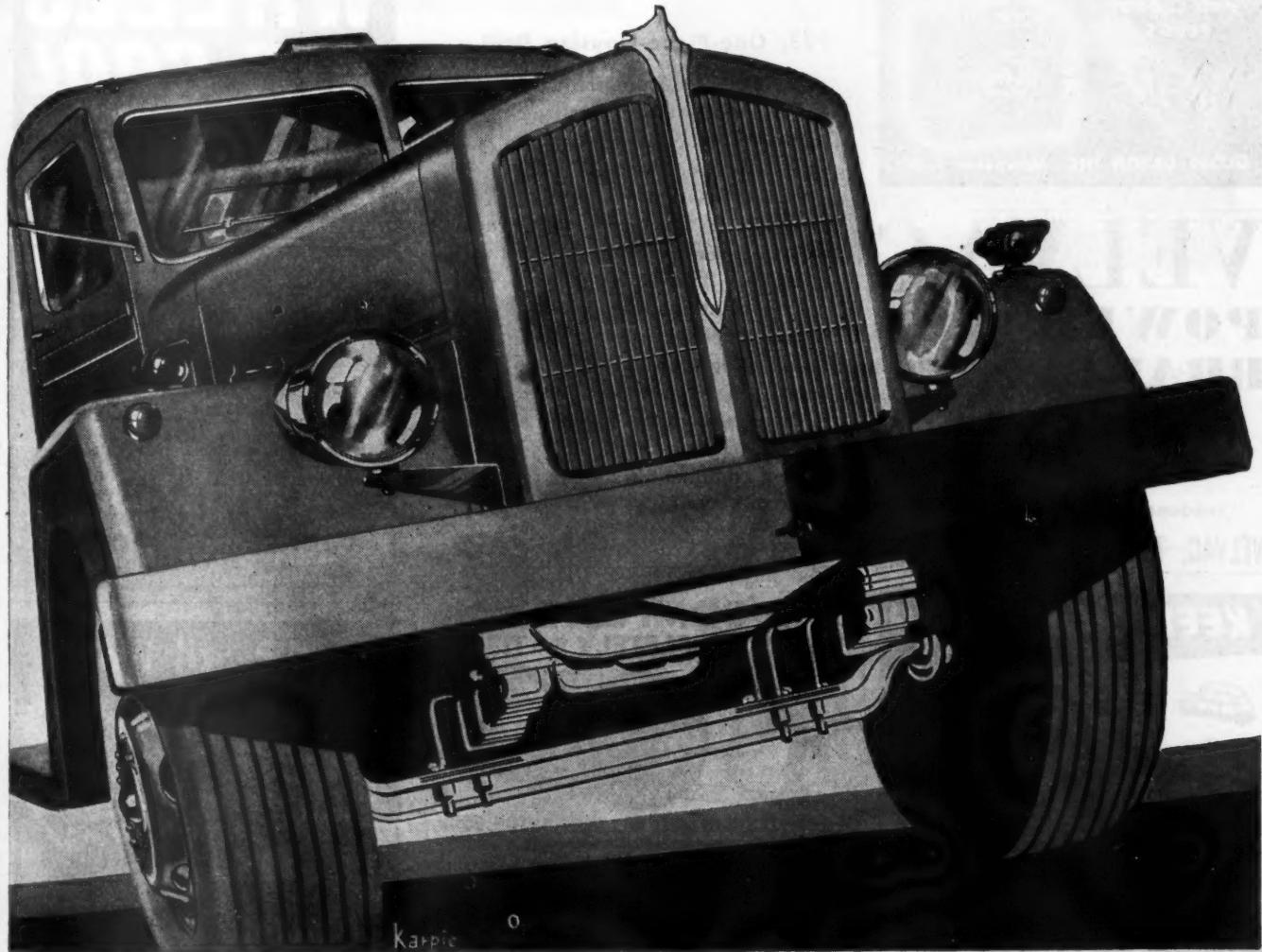
... If your fleet suffers from the usual profit-eating toll of axle failures, broken springs, burned clutches, the new Ward LaFrance is the common-sense answer to more dependable, lower-cost hauling. This stamina comes from a basic engineering principle of providing strength, more than sufficient for your requirements. Ward LaFrance has evolved a sales plan of unusual interest, which you should investigate. Write to our Sales Department today for details.



## WARD LAFRANCE

TRUCK DIVISION

GREAT AMERICAN INDUSTRIES, INC., ELMIRA, NEW YORK



Karpic

# VITAL TO-

- Low Mileage Costs
- Easy Operation
- Maintained Schedules

**SKF**

BALL AND ROLLER BEARINGS



A. F. CURRAN CORP., MELDEN, MASS.

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**GLOBE** Spinning Power  
BATTERIES

Full Spark  
PLUGS

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POWER

BATTERIES



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Better Built  
for Better Service

REPRESENTED  
THROUGHOUT U. S. AND CANADA

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**KEX**

TIRE PLUGS

The  
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THE FITZGERALD MFG. CO., TORRINGTON, CONN.

**FITZGERALD  
GASKETS**

## NEW LOW COST DRILL GRINDER

Anyone can do expert drill grinding with this simple-to-use drill grinding attachment—lets you save buying new twist drills—saves time and materials that dull bits waste. Grinds bits from 3/16 to 1 1/4. Write for FREE literature.

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Better—but not  
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DAYTON Spoke Type Steel

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FOR TRUCKS, TRAILERS AND BUSES.  
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HEAVY DUTY FOR  
OFF THE HIGHWAY SERVICE

—Specially Designed for—  
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It Costs No More for Trucks Specially  
Built to Fit Your Needs. Have Our Engi-  
neers Visit and Analyze Your Operation.

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CARTER  
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A NEW  
PLASTIC  
DISCOVERY

**HITS HARD,**  
yet **PROTECTS**  
—WILL NOT  
MAR, CUT OR  
DAMAGE DELI-  
CATE SURFACES

**NO STING AND NO**  
REBOUND! WILL  
NOT CHIP OR CURL!

**Balanced**  
HICKORY  
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**SEMI-SOFT**  
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IT HEALS  
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IT'S A HARD HITTING "SOFTIE"—Nupla Hammer uses a new semi-soft, flexible plastic that HEALS ITSELF when dented or deformed. Hits hard blows without damage to delicate parts or finishes. Non-inflammable! Not affected by oil or gasoline! A new tool every craftsman wants and needs. 3 sizes and 7 weights.

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NO GEARS + NO BOLTS  
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IT'S ALL  
ONE PIECE



### New Speed Clamp\* Features

1. Exclusive, self-locking ratchet-type design.
2. Lightest weight—lowest profile—sturdy spring steel construction.
3. Uniform circumferential pressure—no pinch or bind.
4. Faster and easier to install or remove.



Latch by hand



Lock with pliers



Remove with screw driver

Widely used throughout military aircraft. May be used over and over again. Sizes from  $\frac{1}{2}$ " O.D. up. In writing for samples, please give outside diameter of hose with fitting inserted.

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**Speed Nut**

FASTEST THING IN FASTENINGS



Speed Clamps for hose connections are engineered and produced by the manufacturers of the famous SPEED NUT shown above.

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designed for **STRENGTH**,  
**BALANCE** and **LONG LIFE**

There are Williams Alloy Steel Open-End Wrenches in every conceivable pattern. Their smooth, sleek appearance belies their great strength and perfect balance aids speed and efficiency.

Whether you are working on a bus, a lathe, a truck or a tractor, you will find these rugged, dependable wrenches trustworthy allies.

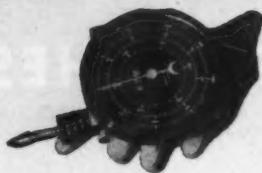
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Jones Portable Tachometers make possible quicker check-ups with greater accuracy.

Used by the world's largest operators of commercial vehicles for checking engine speeds from crankshaft, generators, or other exposed rotating parts; trouble shooting without necessity of road tests. A wide variety of ranges—light weight and heavy duty; guaranteed calibration. Complete with 4" extension rod, convex and concave rubber tips, and steel tip, 12" circ. peripheral disc, and carrying case . . . \$60 FOB Stamford, Conn.

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## JONES MOTROLA

438 Fairfield Ave. Stamford, Conn.

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Improved ventilation for cool operation, longer life and greater efficiency. They stand the strain of peak loads.

12-batt. size . . . \$28.00 less bulb

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Garage tools

BUSHING REMOVERS  
CREEPER CASTERS  
REAMERS

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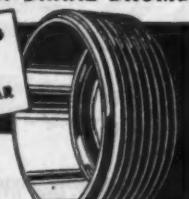
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RESISTS HEAT, SCORING  
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Developed in cooperation  
with General Foundry &  
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FIRST IN { APPEARANCE  
ECONOMY  
DURABILITY

Still Made With DuPont "DULUX"  
Write Today for details

THE PERMALUX COMPANY  
900-10 West Lake Street, Chicago, Ill.

## NEW PRODUCTS

(CONTINUED FROM PAGE 244)

to a minimum; easy to assemble and disassemble.



Standard equipment includes 3/16-in. or 1/4-in. Jacobs Chuck, and 8 ft. of 1/4-in. hose and fittings. 5/16-in. chuck available at slight extra cost. Use Free Postcard For More Details.

## P84. Double Lock Rivets

A new Rivnut of the splined type suitable for use in wood, plastics, leather, hard rubber or other materials where it is necessary to anchor firmly a nut for attaching accessories is announced by The B. F. Goodrich Co.

In the new type splines beneath the countersunk head supply resistance to torque, while the bulge or "upset" which forms below the end of the

(TURN TO PAGE 248, PLEASE)

For Engine Bearings  
Clutch Plates & Parts  
King Bolt Sets

Monmouth  
is the name



HOOF FULL POWER GOVERNORS

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Both "V" TYPE and  
ONE WAY BLADE TYPE  
hand or power hydraulic control  
FOR ALL MOTOR TRUCKS  
FROM 1 1/2 TO 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.  
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FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

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Use Magnus Methods and Materials to clean fast and well and insure a really effective preventive maintenance program.

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AMERICA'S FASTEST  
GROWING RING LINE  
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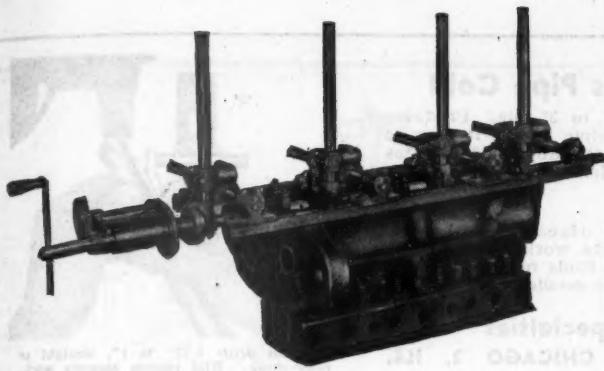
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when the going  
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. . . of cross members, trunnion joints, and verticals makes the Lempco Line Boring Machine fully universal. So even inexperienced operators are assured perfect alignment of main or camshaft bearings. Exclusive Lempco direct fore and aft feed pull. Patented non-creeping tool lock. Take-up adjustment compensates for wear. Direct-reading micrometer. Just one set-up takes care of both camshaft and main bearing jobs.

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Save gas, oil and motor wear.

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ADJUSTABLE THERMOSTATS  
THE DOLE VALVE COMPANY  
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Representatives in Principal Cities

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Style 2 bends  $\frac{3}{8}$ " to 2" pipe.  
Style 3,  $\frac{3}{8}$ " to 3" pipe. Complete, ready to use.

### Pipe Bender That Bends Pipe Cold

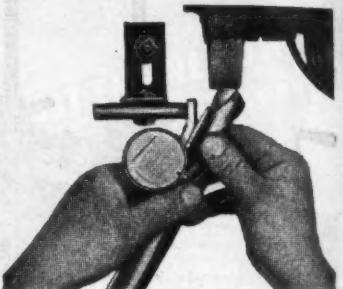
TAL'S PIPE BENDER bends pipe  $\frac{3}{8}$ " to 3" dia. Produces smooth, uniform bends. Hydraulic principle makes it easy to operate with one hand. Compact. Portable. Eliminates elbows, fittings. Saves critical materials.

#### Faster, Accurate Drill Sharpening

Majestic Drill Sharpener sharpens drill edges sharp, evenly, clean-cut,  $5/32$ " to 1". Dial for accurate work. Straight or taper-shank drills positioned in trough. Ends move in guided path. Fits any grinder. Write for complete details.

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Sharpens drills  $5/32$ " to 1", straight or taper-shank. Dial insures accurate work.

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So until Victory is won, Fulton quality-built war necessities will continue to have right-of-way over Fulton Automotive Equipment for the Home Front.

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reduce maintenance costs by decreasing unnecessary stops, starts and slow downs. This also means less wear and tear on equipment with lower gas and oil consumption. Write for complete details now.

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Powerful, reliable and economical in use, here is a precision built compressor that will give long service without frequent parts replacement. We specialize in the manufacture of small, high speed compressors of the highest quality. Write for literature.



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## NEW PRODUCTS

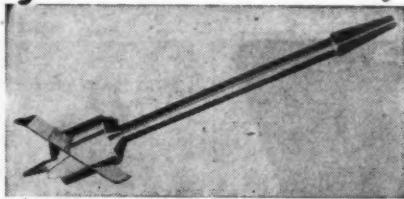
(CONTINUED FROM PAGE 246)

splines furnishes the tension resistance. The splined Rivnut is thus locked into place two ways. Internal threads left intact within the Rivnut shank take an attachment screw for installation of accessories.

Use Free Postcard For More Details.

#### P85. Expansive Bit

Designed on a new principle, an expansive bit created specifically for use in hand braces to cut holes in wood is announced by Bruno Tools, Beverly Hills, Cal.



The center lip which cuts away the core at the center of the hole extends back to form a clamp which firmly holds the adjustable blade at the diameter set. The clamp is locked tight by means of a screw. Once locked in the positive wedge-lock V groove, the cutter remains in place.

An improved diamond shaped screw point gives longer life by less.

(TURN TO PAGE 250, PLEASE)

## LIPE HEAVY-DUTY Clutches

### Insure Maximum Clutch Life

- ★ 20 ball-hinged levers for uniform pressure, smooth engagements, easy disengagements.
- ★ Parallel disc contact. ★ No localized burning. ★ Long facing life.
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Install these husky weatherproof warning lights now, while we can still deliver.

Get the same safety for your department.

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Now 40% GREATER  
DISCHARGE  
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**IDEAL** Rechargeable  
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### NOW IMPROVED!

This increased discharge capacity means—**MUCH BRIGHTER**, **LONGER SUSTAINED LIGHT**—smaller voltage drop assuring **TOP LEVEL-LIGHT VOLUME**—Even greater flashlight satisfaction than already experienced by **MANY THOUSANDS OF USERS**—can **OUTLAST 400 or more DRY CELLS**—**SAVES up to \$10 on each flashlight**. Fits standard flashlight case using 2 or more  $1\frac{1}{4}$  size D dry-cells.

### GUARANTEED!

**IDEAL** Battery Chargers in single, 6-gang and 12-gang types, plug into any light socket. Also rechargeable from automobile ignition line.

**PROMPT  
DELIVERY** Write for  
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**MECHANICAL  
PARTS CLEANER**  
**ELECTRICALLY OPERATED  
COLD WASHING PROCESS**  
for **ECONOMICAL, SAFER**  
and **FASTER CLEANING**

Continuous Filtering prolongs Efficiency of Cleaning Compound

**DEEP WORKING SPACE**—12" with cover closed. Handles large or small parts. No splashing. No loss of small parts. 20-gal. tank. Safety fusible link with self-closing cover reduces fire hazard. Low cost multi-purpose unit, always ready, no heating. Saves time, labor and cleaning compound. Removes mechanics' objections to cleaning dirty parts.

**Use KLEER-FLO CLEANING COMPOUND** for best results; especially prepared. Lifts grease and grime deposits quickly, safely. Will not attack metal or paint. Needs no heat, no water, dries fast.

**AVAILABLE ACCESSORIES**—10-gallon DUNKING TANK, self-draining DRYING SHELF for basket or parts; BASKETS fit into dunking tank. Strong, firm CLEANING BRUSHES.

WRITE TODAY for FULL INFORMATION

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Mfrs. of Mechanical Parts Cleaners, Cleaning Compounds, Kool-Aut Pumps

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We expect to supply ALL the  
**"KING" TESTING EQUIPMENT**  
. . . YOU NEED



"KING" MT-625

We cannot supply all "KING" Testing Equipment, but we are permitted to make small Testing Units, Battery Chargers, and Welders within our quota limitations. Even from this limited supply you may be able to obtain the units you need. Jobbers buy from us on WPB Form 547 or PDIA and Dealers buy from "KING" Jobbers without a priority rating. It is impossible to fill all orders now for "KING" Testing Equipment but we are looking forward to the time when we shall be able to give the same prompt service as in past years.

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**The ELECTRIC HEAT CONTROL Co.**  
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GOOD "KING" PRODUCTS SINCE 1914

Mfg. by Allied  
Equipment Co.  
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Thousands  
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### The Tank You Will Want On All Your Trucks

With safety features that gain Underwriters' approval, a simplified mounting bracket and other exclusive advantages, this is the greatest tank value obtainable.

Patented Brackets mount tank on either side without drilling or welding. Built in measuring stick standard equipment. Exclusive Patented Four-Way Multi-Selector Tank Valve. Thousands of tanks already in use.

Distributed Nationally by THE TRUCKSTELL CO. 1672 Union Comm. Bldg.  
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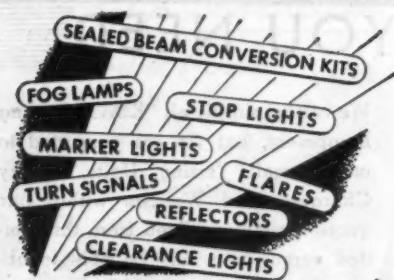
For a Smooth, Safe Ride  
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Hydra-Matic Shock Eliminators

★ ★

The Cleveland Pneumatic Tool Co.  
Cleveland, Ohio



ARROW SAFETY DEVICE CO.  
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## AUTOPULSE ELECTRIC FUEL PUMP

- Uninterrupted Schedules
- Instant Starting
- Greater Economy
- No Vapor Lock
- Added Protection

AUTOPULSE CORP., DETROIT MICH.



## NEW PRODUCTS

(CONTINUED FROM PAGE 248)

ening the chance of breakage. The lead screw is threaded finer than is usual for this type of tool. This feature helps pull the bit through the wood, requiring only light pressure to cut quickly and cleanly because the lead screw is continuously and firmly engaged while the adjustable blade is cutting.

Bruno expansive bits are equipped with two cutting blades—long and short—required to cover the range of the tool. A graduated scale on the blade makes adjustment easy.

Use Free Postcard For More Details.

### P86. Transparent Plastic Tape

A transparent, flexible thermoplastic tape, facilitating inspection and servicing of equipment on which it is used, has been introduced by the Irvington Varnish and Insulator Co., Irvington, N. J.

Useful not only as electrical insulation, Fibron Tape No. 3 also protects wiring, cables, and equipment against abrasion. The tape is heat sealing, flame resistant, flexible at low temperatures, and resists attack by acids, alkalies, moisture, oil, grease and corrosive fumes.

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(TURN TO PAGE 252 PLEASE)

## COMPARISON PROVES

THAT BOWMAN Bright Beam PLASTIC LENSES

are your best bet for replacements for all, round type, marker lamps.

Because they are:  
SHATTER PROOF  
FLEXIBLE • COLOR  
FAST • WEATHER  
PROOF • ECONOMICAL.

Made in two colors—  
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parency.

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lens — then try it on ours.

## SOAX

AUTOMOTIVE and AVIATION CHEMICALS

E. A. GERLACH CO.  
PHILA. 40, PA., U. S. A.

## VALLEY CHARGERS HAVE Gone To War



For the Duration . . . we will not be able to supply Valley Chargers to our many customers and prospects because our war production demands, otherwise, take up our entire facilities. Remember Valley Chargers . . . when we can again supply you with these simple, efficient and economical battery-charging units.



VALLEY ELECTRIC CORP.  
4221 Forest Park Blvd., St. Louis, Mo.

Many new items have  
been added to the  
Wohlert line. Bulletin of  
these will be sent to you  
upon request.

Wohlert  
CORPORATION  
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## UNITS AVAILABLE

To holders of Certificates of Transfer P. D. 381  
or Government Exemption Permit P. D. 382

## GRICO

2-AXLE DRIVE  
19842 W. Eight Mile Rd.  
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**ADECO**  
NOZZLE TESTER

Keeps Diesel Engines  
Running Efficiently

TESTS FUEL INJECTORS  
AND HYDRAULIC DEVICES

At Pressures Up To 10,000 p.s.i.

To keep diesel engines operating at peak efficiency, this portable, precision-built Adeco Nozzle Tester is indispensable.

Light in weight yet built for heavy-duty service, it enables any mechanic to make quick, accurate tests on injector opening pressure, spray pattern, etc., and detect stuck needle valves and leakage around valve seats. Tests both large and small injectors, on bench or engine, at pressures up to 10,000 p.s.i. Prevents costly delays and possible damage to engine.

Ideal for testing hydraulic devices.

Write for bulletin  
on this practical,  
low-cost unit.

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*There's Only One*  
**BURN-OUT PROOF**  
DIRECTIONAL SIGNAL SWITCH  
*And we make it!*



For your Post-War  
**REFRIGERATOR TRUCKS**  
Specify

**DRY-ZERO**

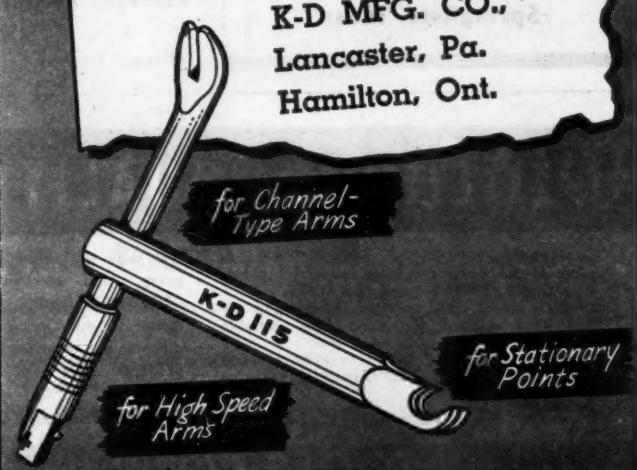
**IT'S THE FINEST INSULATION!**

DRY-ZERO sheds water like a duck . . . can't absorb moisture by capillary action . . . **SEVEN TIMES LIGHTER** than commercial corkboard . . . doesn't rot, pack down or absorb odors . . . because it's made of **CEIBA Fibre**. Right now, Uncle Sam is using all available Ceiba for lifesaving equipment and aircraft . . . but when you plan your post-war refrigerator trucks, specify DRY-ZERO, the famous Ceiba Fibre insulation with the low thermal conductivity of only .24 B.T.U.

**DRY-ZERO CORPORATION**  
Merchandise Mart, Chicago 54

**CORRECT** point alignment  
assured with this K-D No. 115  
Aligning Tool. Fits all kinds of  
points, in all kinds of distrib-  
utors. Accurately machined,  
correctly tempered for depend-  
able service. At your Jobber's.

K-D MFG. CO.,  
Lancaster, Pa.  
Hamilton, Ont.



# ON ALL FRONTS




# TUTHILL SPRINGS

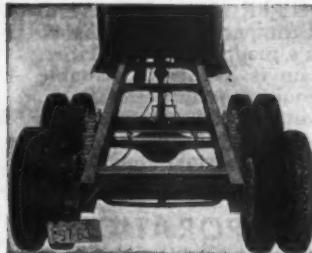
WHEN Uncle Sam called TUTHILL SPRINGS into service, he demanded the best that our sixty-three years' experience, skill and facilities could produce. And he has not been disappointed. They serve on all fronts, in all types of motorized service. Strong, well-made, resilient, tough, durable, they're in front at the front.

Our engineering department is at your service.

**TUTHILL SPRING CO.**  
760 W. Polk St.  
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### TEN WHEELERS for 1 1/2 to 5 Ton Trucks



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Also makes Little Giant Frame Extensions, Hand Hoists, Wrecking Cranes.

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## AMERICAN BOSCH

AVIATION & AUTOMOTIVE ELECTRICAL PRODUCTS

FUEL INJECTION EQUIPMENT

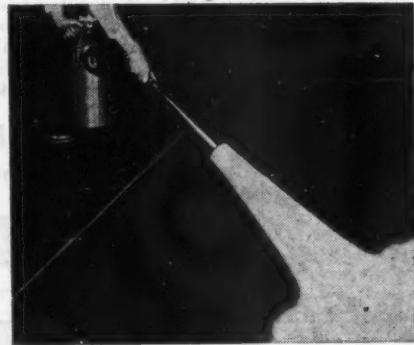
American Bosch Corporation Springfield, Mass.

## NEW PRODUCTS

(CONTINUED FROM PAGE 250)

### P87. Portable Fire Extinguisher

A new fast-acting portable fire extinguisher is announced by American-LaFrance-Foamite Corp., Elmira, N. Y. It is the Alfite Speedex, made



in three different sizes and using carbon dioxide as the fire extinguishing agent.

The new unit will extinguish speedily small oil or electrical fires, with no loss of the important extinguishing gas on anything but the fire itself. The Speedex operating valve lever is directly above the carrying handle. It can be opened instantly by the pressure of the hand grip and is closed quickly by releasing the hand pressure.

Use Free Postcard For More Details.  
END

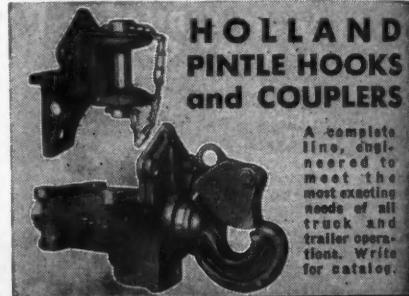
(Please resume your reading on P. 60)



## CAMPBELL

### Lug-Reinforced TIRE CHAINS

THE CHAIN WITH THE SAW-TOOTH GRIP  
Greater Mileage Greater Safety  
INTERNATIONAL CHAIN & MFG. CO., YORK, PA.



**HOLLAND HITCH COMPANY**  
HOLLAND, MICHIGAN, U.S.A.

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TRUCKS  
are fighting equipment  
vital to Winning War..

KEEP YOURS FIRING  
..every cylinder at  
Top Efficiency!

**RAMCO 10**  
PISTON RINGS  
up

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To thousands of skilled mechanic users in many of the world's largest industrial plants OLDFORGE TOOLS mean QUALITY. 19 years of careful, uniform temper and design have created for them this enviable reputation. You, too, can be a proud user of Quality Tools and their modest cost will surprise and interest you.

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